Medical Preparedness and Planning for Manmade Disasters

and

Deployable Telemedicine

Training workshops hosted by the

Center for Disaster and Humanitarian Assistance Medicine (CDHAM)
Uniformed Services University of the Health Sciences (USUHS)
Bethesda, Maryland

Under the sponsorship of the

United States Joint Forces Command (JFCOM)
Norfolk, Virginia

at the

US Mexico Border Health Association (USMBHA)

59th Annual Meeting
New Mexico State University, Las Cruces, New Mexico
May 29 – June 1, 2001

60th Annual Meeting
Westin Soberano Hotel, Chihuahua, CHIH, Mexico
June 4, 2002

In support of

USMBHA AFMES

Medical Preparedness and Planning for Manmade Disasters and Deployable Telemedicine

Contents

MEDICAL PREPAREDNESS AND PLANNING FOR MANMADE DISASTERS and DEPLOYABLE TELEMEDICINE

A one and one-half day symposium was presented by the Center for Disaster and Humanitarian Assistance Medicine (CDHAM), Uniformed Services University of the Health Sciences (USUHS), Bethesda, Maryland as part of the United States Mexico Border Health Association (USMBHA) 59th Annual Meeting held at New Mexico State University, Las Cruces, New Mexico from May 29-June 1, 2001.

While global medical communities have a growing understanding, capacity, and capability to provide life-saving care following natural disasters, the unique challenges of man-made disasters – ranging from accidents to terrorism, and from hazardous materials exposures to emerging infections – pose new challenges to science, medicine and international partnerships. This is true for military and civilian institutions, and in cases where assets from both are mobilized to provide rapid response capabilities.

The symposium was presented to community emergency/first responder civil authorities, border health workers, and military personnel of the United States and Mexican armed forces. The symposium objectives were to examine recent manmade disasters through the use of case studies and lessons learned, and evaluate the fundamentals of emergency medical planning and practice. By sharing experiences, participants gained an understanding of 'first principles' that may be common across events and cultures.

Specific topics of the symposium focused on:

- Post-disaster trauma and other emergency health care;
- Natural vs. manmade disasters – what is common and what is different;
- Accidents, terrorism, and responding to health threats such as hazardous and emerging infections;
- Military and civilian emergency medical capability synergy; and
- Unique opportunities in border communities.

As part of a one day workshop at the USMBHA 60th Annual Meeting held at the Westin Soberano Hotel, Chihuahua, CHIH, Mexico on June 4, 2002, the CDHAM took part in conducting a bioterrorism exercise simulated to occur along the US-Mexico border and provided real-time, hands-on demonstrations using commercial, off-the-shelf telemedicine equipment.

The United States Joint Forces Command (USJFCOM), Norfolk, Virginia was the sponsoring agency that supported these training workshops as an integral part of their theatre engagement plan for humanitarian assistance activities.

Medical Preparedness and Planning for Manmade Disasters

59th Annual Meeting
US Mexico Border Health Association (USMBHA)

New Mexico State University, Las Cruces, New Mexico
May 29 – June 1, 2001

Medical Preparedness and Planning for Manmade Disasters

New Mexico State University
Las Cruces, New Mexico

Tuesday, May 29, 2001

1:30 – 1:40 p.m.	Welcome, Administrative and Introductory Remarks
1:40 – 2:45 p.m.	***Keynote Address:*** *Health Preparedness and Planning for Disasters: A Civil Military Perspective* Jean-Luc Poncelet, M.D., PAHO
2:45 – 3:00 p.m.	Break
3:00 – 3:10 p.m.	Introduction to the Case Studies
3:10 – 3:50 p.m.	***Terrorist Events:*** *US Embassy bombing in Africa* Bonnie Smoak, COL, MC, USA
3:50 – 4:30 p.m.	***Accidents:*** *Natural gas pipeline explosion in Mexico* Dr. Rogelio Pineda-Mejia, Mexican Ministry of Health
4:30 – 5:10 p.m.	***Man-made Disasters:*** *Toxic Exposures in Venezuela* Glenn Mitchell, COL, MC, USA
5:10 – 5:15 p.m.	Session Summary

Wednesday, May 30, 2001

8:30 – 8:35 a.m.	Administrative update and review
8:35 – 8:45 a.m.	Introduction to Military Response in Support of Civil Authority
8:45 – 9:45 a.m.	*Training Programs for Trauma and Disasters: Experiences in Disaster Assistance* Gral de Brig MC Rafael Santana, Deputy SG, Mexico City, Mexico
9:45 – 10:00 a.m.	Break
10:00 – 11:00 a.m.	*USAF International Health Specialist Program* Brig Gen Dan L. Locker, USAF, MC, CFS, Keesler AFB
11:00 – 12:30 p.m.	***Panel Discussion:*** *Fundamental Principles of Disaster Medicine* Dr. Craig Llewellyn, COL, MC, USA (Ret.) Moderator

Thursday, May 31, 2001

8:30 – 10:30 a.m.	***Panel:*** *Special Opportunities for Improving Coordination in Disaster Preparedness and Response in Border Communities* CAPT Joe Iser, USPHS, Moderator Alex Valdez, JD, New Mexico Department of Health Cecilia Rosales, MD, Arizona Office of Border Health Catherine Torres, MD, US-Mexico Border Health Commision

Medical Preparedness and Planning for Manmade Disasters

Attendees

Dr. Manuel Acosta Munoz
Servicios de Salud de Chihuahua
Chihuahua, CHIH, Mexico

Ms. Elisa Aguilar

Mayor M.C. Jesus J. Almanza-Munoz
Secretaria de la Defensa Nacional
D.P. 11500, Mexico

Ms. Terri Apemeo
Texas Department of Health
Presidio, TX

MSgt. Coral Barrett
59th MDW
Lackland AFB, TX

MAJ Glenn R. Blanchette, USA
USSOUTHCOM
Washington, DC

NCOIC Sammie L. Bonner, USAF
Wilford Hall Medical Center
Lackland AFB, TX

Ms. Sandra Brady
American Red Cross
Washington, DC

Capitan Alberto Calderon-Nunez
Hospital Cenmtral Militar
C.P. 11649, Mexico

Mr. Stuart Castle
Department of Health
Santa Fe, NM

MAJ Alana E. Conley, MSC, USAR
JFCOM
Fayetteville, NC

Dr. Frank Cortez-Flores
Loma Linda University
San Dimas, CA

Medico Cirujano Enrique Davis
Hospital General en Nogales
Sonora, Mexico

CDR Enrique Delgado, USPHS
USPHS RO VI
Dallas, TX

Ms. Jennifer M. Downey, MPH
NM Department of Health
Santa Fe, NM

Dr. Jeffrey E. Drifmeyer, Ph.D.
CDHAM
Bethesda, MD

Dr. Luis Duarte Amador
Department of Environmental Health
Chihuahua, CHIH, Mexico

Dr. Douglas A. Ehrhardt, Ph.D.
CDHAM
Bethesda, MD

CDR Epifanio Elizondo, USPHS
USPHS, RO VI
Dallas, TX

Dr. Ivonne Flores
ISSSTE and Ciudad Juarez Municipality
Juaraz, CHIH, Mexico

Colonel Vicky L. Fogelman, USAF, BSC
USAF/SGT
Bolling AFB, DC

Cirojuno Dentista Eddy Garcia Zapota
Servicios de Salud de Nuevo Leon
Cerralvo, NL, Mexico

Dr. Ulises Grajeda, M.D.
ISSSTE
Juarez, Mexico

Dr. Val G. Hemming, M.D.
USUHS
Bethesda, MD

Medico Ciurjano y Partero Rafael Hernandez Flores
Servicios Salud de Nuevo Leon
Sabinas Hidalgo, NL, Mexico

Medical Preparedness and Planning for Manmade Disasters

Attendees

Dr. Jorge Hernandez Rodriguez
Secretaria de Salud, Tamaulipas
Victoria, TAM, Mexico

Medico Cirujano Genoveva Hinojosa Garza
Sabinas Health District
Nuevo Leon, Mexico

Ms. Rebekah W. Hoffacker
US EPA
San Diego, CA

Dr. Mario Holguin
Secretaria de Salud
Chihuahua, CHIH, Mexico

Dr. Joseph P. Iser, M.D., Dr.P.H.
USPHS
Dallas, TX

Lt Col Yolanda Jimenez, USAF
59 MDW
Lackland AFB, TX

Dra. Rocio Jimenez Godinez
Coordinadora
Baja California, Mexico

Mr. Claudio Laffont

Dr. Craig H. Llewellyn, MD, MPH, FACPM, FRSM
USUHS
Bethesda, MD

Brig Gen Dan L. Locker, USAF, MC, CFS
81st Medical Group
Biloxi, MS

Mr. Francisco Lopez
USMLO, Mexico City
Laredo, TX

Dr. Gerardo Lopez
Casas Grandes Health District
Nuevo Casas Grandes, CHIH, Mexico

Ingeniero Agronico Pedro Lopez Hernandez
Servicios de Salud de Nuevo Leon
Sabinas Hidalgo, NL, Mexico

Maj Douglas A. Lougee, USAF, MC
49th Medical Operation sSquadron
Holloman AFB, NM

Dr. Rafael Magana
Casa Grandes Health District
Chihuahua, CHIH, Mexico

CDR Frank McNerney, USPHS
USPHS, RO VI
Dallas, TX

Dra. Elizabeth Mellado Moya
Secretaria de Salud Coahuala
Saltillo Coahuile, Mexico

Dr. Daniel Millan Alcantara, M.D.
Mexicali, BC, Mexico

Ms. Eliza Mills
Texas Department of Health
Presidio, TX

COL Glenn W. Mitchell, MC, USA
Headquarters, U.S. Army Medical Command
Fort Sam Houston, TX

Dr. Ruben Morales Marin
Cuauhtemoc (Sierra) Health District
Chihuahua, CHIH, Mexico

Dr. Ravael Munoz
Casas Grandes Health District
Chihuahua, CHIH, Mexico

Mr. Alberto Noriega

Mr. Homero Olivares

Dr. Guadalupe Orozco
SSA, Palomas Health Clinic
Palomas, CHIH, Mexico

Ms. Rosa Ortega

Dr. Rogelio Pineda-Mejia, M.D.
National Center for Epidemiological Surveillance
Mexico, DF 06700, Mexico

Medical Preparedness and Planning for Manmade Disasters

Attendees

Dr. Frederick Pintz, M.D.
New Mexico Department of Health
Santa Fe, NM

Dr. Jean Luc Poncelet
PAHO/WHO
Washington, DC

Dr. Eduardo Rico
IMSS
Chihuahua, CHIH, Mexico

Dr. Edna Rico
Universidad Autonoma de Ciudad Juarez
Chihuahua, CHIH, Mexico

General Brigadier M.C. Victor M. Rico-Jaime
Secretaria de la Defensa Nacional
C.P. 11500, Mexico

Quimico Clinico Biologo Abimael Rodriguez Guaniana
Secretaria de Salud del Nuevo Leon
Sabinas Hidalgo, NL, Mexico

Dr. Cecilia Rosales, M.D.
Arizona Department of Health Services
Tuscon, AZ

Mr. Robert D. Ruiz, USA
US Army South
Fort Buchanan, PR

General de Brigada M.C. Rafael A. L. Santana-Mondragon
Secretaria de la Defensa Nacional
C.P. 11500, Mexico

Medico Ciurjano y Partero Bertha Argelia Santos Gonzalez
Servicios Salud Nuevo Leon
Sabinas Hidalgo, NL, Mexico

Fire Chief Walter T. Simpson
Columbus VFD/Ambulance Service
Columbus, NM

Dr. Gary L. Simpson, M.D., Ph.D., MPH
NM Department of Health
Santa Fe, NM

COL Bonnie Smoak, MC, USA
USUHS
Bethesda, MD

Mr. Raul Sotomayor
CDHAM
Bethesda, MD

Captain EMT Alexis Spriggs
Columbus VFD/Ambulance Service
Columbus, NM

Dr. Alejandro Suarez
SSA, Juarez Health District
Juaraz, CHIH, Mexico

Teniente Coronel M.C. Cesar Tinajero-Estrada
Hospital Central Militar, Secretaria de la Defensa Nacional
C.P. 11649, Mexico

Dr. Catherine Torres, M.D.
US Mexico Border Health Commission
Las Cruces, NM

Mr. Alex Valdez
New Mexico Department of Health
Santa Fe, NM

Mayor M.C. Rene F. Vazquez-Martell
Secretaria de la Defensa Nacional
C.P. 11500, Mexico

Professor Carlos Velazquez-Garcia, Lic. Psych.
Traumatology Center for Puerto Rico and the Caribbean
San Juan, PR

Dr. J. Leonel Villavicencio, M.D.
USUHS
Bethesda, MD

Ms. Nancy Williams-Sykes
59th Medical Wing/MCST
Lackland AFB, TX

Mr. Barak Wolff
NM Department of Health
Santa Fe, NM

Ms. Judith Wong Rios

Health Preparedness and Planning for Disasters: A Civil Military Perspective

Jean Luc Poncelet, MD, MPH
Pan American Health Organization
Washington, DC

Health Preparedness and Planning for Disasters: A Civil Military Perspective

Dr. Jean Luc Poncelet

Office of the Assistant Director
Program on Emergency Preparedness and Disaster Relief
HQ, Pan American Health Organization
Washington, DC

Dr. Jean Luc Poncelet is Regional Advisor for the Disaster Preparedness Program for Latin America and the Caribbean. Since leaving private practice as a general practitioner in 1986, he has served as Program Officer in Costa Rica, Caribbean Subregional Advisor in Antigua and Barbados, and Disaster Preparedness Program Coordinator in Ecuador before coming to his present assignment with PAHO/WHO in Washington, DC. He has participated in humanitarian operations following numerous disasters including earthquakes, hurricanes, and chemical spills, and has participated in the elaboration of many technical documents related to disaster management.

Brief Narrative:

The main factor in disaster response is not a question of abilities to treat individuals but rather the ability to efficiently use available resources. Coordination among institutions as different as military, ministry of health and NGO's are the main elements and are even more important when coming from abroad. The lecture will review benefits and limitations of inter-institutional coordination based on disasters which have occurred in the Americas during the last 20 years. The participants will also learn from previous experiences on disaster planning in broader areas.

Objectives:

- Identify at least five ways to improve coordination among main health sector response and preparedness actors.
- Describe the three major components of a health disaster management program.
- Describe the role and function of PAHO and two other main humanitarian actors in the Americas.

Outline:

- Role of PAHO in Disaster Management.
- Main actors in disaster management.
  - Nationals
  - Regional and internationals
- Main disaster myths in international assistance.
- Health disaster coordination.
  - Civil military coordination: A special case.
- Conclusions

I. What is a Disaster?

A. WHO definition: Any public health situation endangering the life or health of a significant number of people and demanding immediate action.

B. A pragmatic public health definition: Any health emergency making our newspaper front page and/or TV prime time news.

II. Why do Disasters Exist?

A. Three main factors:

1. We build and are still building our society, ignoring too often that hazards exist that our society still believes are too expensive to prevent.
2. We confuse emergency and disaster.
   a. The issue is not to take the best care of each patient.
   b. It is to manage as well as possible all existing resources in order to save the maximum number of lives and reduce morbidity (illnesses, handicaps, etc.)
3. Our societies are divided:
   a. By Specialist
      1) Engineer & architects, etc.
      2) Physician & public health, etc.
   b. By Border and Culture, but disasters do not recognize borders.

III. Why is PAHO Involved in Disaster Management?

A. Health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity. (World Health Organization Constitution)

B. Vulnerability to disasters is not compatible with physical, mental or social well-being.

IV. The Pan American Health Organization

A. Established in 1902 .

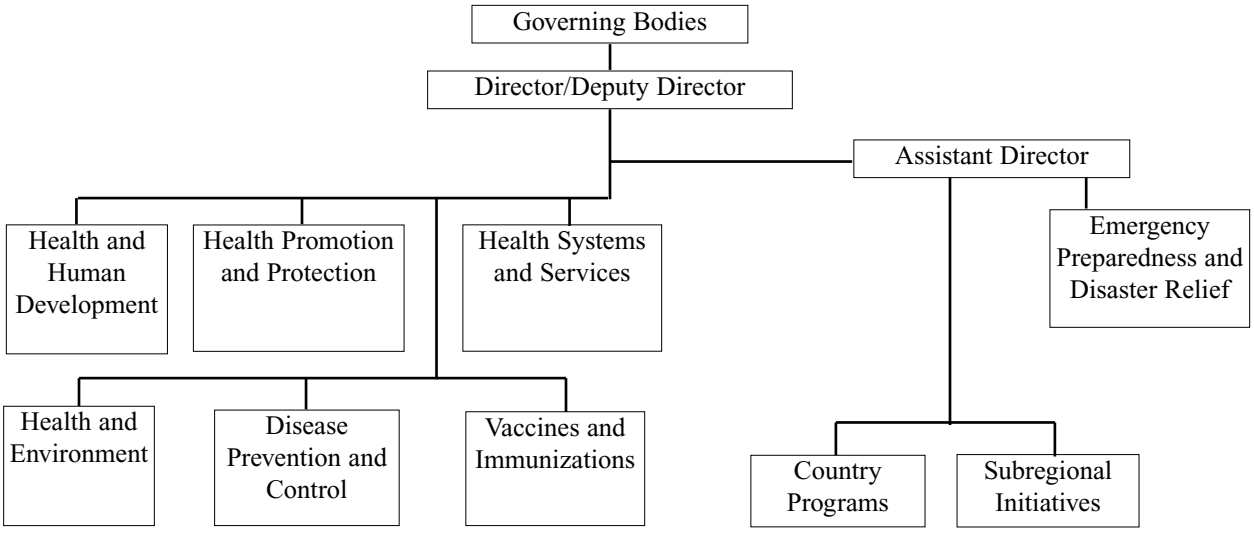
B. All countries of the Hemisphere are members.

C. Since 1947, PAHO serves as WHO Regional Office for the Americas.

V. The Pan American Health Organization (PAHO/WHO)

A. Double identity as part of the Inter American and the UN Systems

B. PAHO Organizational Chart



VI. Decentralized Disaster Plan

A. PAHO Headquarters, Washington, D.C.
B. Caribbean Subregional Office, Bridgetown, Barbados
C. Central America Subregional Office, San Jose, Costa Rica
D. South America Subregional Office, Quito, Ecuador

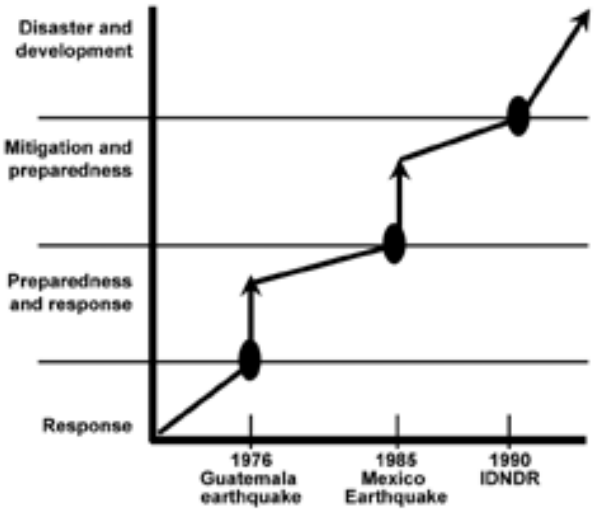
VII. Program Objectives

A. Before a disaster:
    1. Prevention, mitigation
    2. Preparedness
B. After a disaster:
    1. Coordination of international assistance

VIII. Scope of the Program

A. Natural Disasters
B. Technological Disasters
C. "Complex Disasters"

IX. From Ad Hoc Response to Disaster and Development



X. PAHO

A. PAHO is an intergovernmental agency providing TECHNICAL ASSISTANCE.
B. It is NOT a Funding Agency nor a Private Voluntary Organization (PVOs).

XI. The World Health Organization is a Specialized Agency of the United Nations

A. World Bank
B. FAO
C. ILO
D. WHO
E. UNESCO
F. WMO
G. Other Specialized Agencies

XII. The Humanitarian Actors in the UN System

A. The United Nations Department for Humanitarian Affairs (OCHA).
   1. Coordinates the Response.
   2. Assesses damages and needs.
B. The UN High Commissioner for Refugees (UNHCR).
   1. The leading agency for all refugees matters.
C. UNDP looking at preparedness and mitigation.
D. The World Health Organization (WHO).
   1. Created in 1947.
   2. All countries are members.
   3. Responsible agency for all health matters:
      a. Water and sanitation.
      b. Primary health care.
      c. Nutrition, etc.

XIII. Other Humanitarian Actors

A. Red Cross System
   1. Federation (IFRCS)
   2. International Committee (ICRC)
B. NGO's / PVO's
   1. International PVO's
   2. Local NGO's

XIV. Other Bilateral Aid Agencies and Armed Forces in Addition to Mexico and the USA

A. Regional Entities:
   1. PAHO/WHO
   2. IDB
   3. OAS
   4. European Com. ECHO
   5. CDERA
   6. SICA/CEPREDENAC
B. Bilateral Agencies:
   1. Canada
   2. USA
   3. France
   4. Japan
   5. Mexico and CA Countries
   6. Nordic Countries
   7. UK
   8. Netherlands
C. UN Agencies:
   1. UN Secretariat, Funds
   2. Specialized Agencies
      a. OCHA/UN
      b. UNDP
      c. UNHCR
      d. WFP
      e. World Bank
      f. UNFPA
      g. PAHO/WHO
      h. UNICEF
D. NGO's:
   1. More than a thousand registered Humanitarian NGO's
   2. Some countries have more than 250
      a. MSF
      b. OXFAM
      c. CARE
      d. SCR
      e. PADF
      f. ONG Local
E. Military:
   1. SOUTHCOM
   2. Mexico
   3. MCDU/UN
   4. NATO
   5. IADB
   6. RSS/Caribbean
F. Red Cross:
   1. International Federation of Red Cross and Red Crescent Societies (IFCRCS) - Natural Disasters
   2. International Committee of Red Cross (ICRC) - Civil Wars and conflicts
   3. National Red Cross Societies

XV. The Main Challenge Today is COORDINATION !

XVI. Military Participation in Humanitarian Operations Will Continue to Increase. Why?

A. More "complex disasters".
B. Security risks to humanitarian workers.
C. Changing mission of the militaries.

XVII. Danger is to Overlook:

A. The most efficient and adapted response, preparedness and mitigation will always be the local/ national one.
B. Regardless of its quality external assistance will only be a complement to national response.

XVIII. The "Three Wishes" of the Humanitarian Organizations

A. "We know what to do".
B. Give us:
    1. Security – without inconvenience.
    2. Transportation – without cost.
    3. Communications – without coordination.

XIX. The Concern of the Humanitarian Organizations

A. Once tasked, the military will be in charge.
B. Others should shape up or ship out.

XX. Conflicting Points of View ?

A. Humanitarian missions are good for public relations, troop morale and readiness of the military?
B. Or do they have specific added value?

XXI. More Points of View...

A. The victims: Are they entitled to an opinion?

XXII. The Underlying issue: Whose Disaster is it?

A. The national authorities?
B. The humanitarian agencies?
C. The funding agencies ?
D. The United Nations?
E. The military?
F. The mass media?
G. The local communities?

XXIII. Clash of Cultures?

A. Today's agenda:
    1. How to bridge the gap between the military and the civilian cultures?
    2. An increasing military participation in humanitarian operations is welcome.

XXIV. How to Improve its Effectiveness?

A. By learning from others' experience:
    1. The UN and the PVO's have already made most of the possible errors!
B. Adopt a primary health care approach.
    1. Emphasize preventive medicine:
        a. Basic water supply.
        b. Local immunizations schemes.
        c. Health education.
    2. Assessment is best done jointly between all partners.

XXV. Assessment

A. Rapid assessment is only a complement to the collective knowledge of institutions, NGO's and UN agencies present on site.

XXVI. A Clear "Mission Statement"

A. Ambiguity will only breed misunderstanding and resentment.

XXVII. Coordination

A. Coordination of humanitarian agencies?
B. Coordination with humanitarian agencies!
    1. There are well-established national mechanism (NDC) and international mechanisms for coordination (UN).
    2. They should be further strengthened.

XXVIII. Coordination With the Local Militaries

A. A success story in the Caribbean:
    1. Joint Trade Winds exercise between the Regional Security Services, the local governments with the support of the US military.
B. A sensitive issue in several Latin American countries with a past of human rights abuses and dictatorship.

XXIX. How to Improve Coordination?

A. More dialogue to bridge the gap between the two cultures.
B. Inter agency workshops/training.
C. Jointly planned and implemented training activities and exercises.

XXX. The Main Conclusions:

A. Disasters exist and can be reduced if all of us collaborate better.
B. Humanitarian operations can NOT be improvised. Take the time to contribute before the disaster in emergency preparedness and mitigation.

US Embassy Bombing in Africa

Bonnie Smoak, COL, MC, USA
Uniformed Services University of the Health Sciences
Bethesda, MD

US Embassy Bombing in Africa

Bonnie Smoak, COL, MC, USA
Uniformed Services University of the Health Sciences
Bethesda, MD

Colonel Bonnie Smoak is the Director, Division of Tropical Public Health in the Department of Preventive Medicine and Biometrics at the Uniformed Services University of the Health Sciences. An Army Preventive Medicine officer, she has participated in several humanitarian relief operations in Africa and the Caribbean. She was assigned to the US Army Medical Research Unit – Kenya when the bombing of the American Embassy in Nairobi occurred. Within an hour of the explosion, she joined the Embassy medical staff to respond to this disaster.

Brief Narrative:

In 1998, a terrorist truck-bomb directed at the American Embassy in Nairobi killed over 200 people and injured over 4,000. A descriptive analysis of the medical response and problems that arose will be given to provide information to better prepare for future incidents. This will be accomplished with an opening didactic presentation, followed by questions and answers.

Objectives:

- Describe the types of injuries and specific disaster management aspects generally associated with conventional bombings.
- Discuss problems that arose during the medical response after the Nairobi bombing in areas such as communication, logistics, security.
- Identify areas in the disaster planning for a conventional bombing that should be addressed to mitigate problems in the future terrorist attacks.

Outline:

- Situation prior to the bombing and events surrounding it.
- Problems that arose during the immediate response to the bombing (up to five hours after the bombing).
  - Triage
  - Patient transport
  - Patient care (types of expected injuries and types of actual injuries)
  - Communication
  - Security
- Problems during the first 72 hours of the medical response.
  - Security
  - Personnel accountability
  - Assessing and caring for patients
  - Mortuary affairs
  - Communication
  - Logistics
  - Coordination of responding outside agencies
  - Public relations
- Long term problems.
- Planning for the future.

I. U.S. Embassy Bombings, 7 August 1998

A. Kenya
   1. Over 200 deaths inside the embassy.
      a. Twelve Americans.
      b. Thirty two Kenyans.
   2. Over 4,000 injuries.
   3. Twenty five air-evacuated.

B. Tanzania
   1. Twelve deaths.
   2. Eighty five injuries.

II. The Initial Scenario

A. Embassy location.
B. Failed to gain entrance into the embassy.
C. Initial grenade blast.
D. Bomb blast of 1000 lbs TNT.
E. Chaos.

III. What Happened?

A. Inside the Embassy:
   1. Acrid smoke.
   2. No emergency lights.
   3. Debris everywhere.

B. Outside the Embassy:
   1. A Security Nightmare.
   2. Gridlock.

IV. Evacuation of the Injured

A. Triage became impossible.
B. Untrained rescuers.
C. Transportation by any vehicle.
D. Accountability of patients lost.

V. Major Hospitals

A. USAID Building – 3.1 miles (5 km).
B. M.P. Shah – 3.1 miles (5 km).
C. Nairobi Hospital – 1.9 miles (3 km).
D. Kenyatta National Hospital – 1.9 miles (3 km).
E. Masaaba Hospital – 1.9 miles (3 km).
F. Hurlingham Hospital – 2.5 miles (4 km).
G. Aga Khan Hospital – 2.5 miles (4 km).
H. Mbagathi District Hospital.
I. Kenyan Military Hospital – 3.1 miles (5 km).
J. Mater Misericordie Hospital – 2.5 miles (4 km).
K. St. James Hospital – 3.7 miles (6 km).

VI. Coordination of Medical Response

A. Embassy physician headed the response.
B. Adequate number of local healthcare providers.
   1. British and Japanese Embassy's physicians.
   2. Other US government and military healthcare providers.

C. Communications:
    1. Local phones were unreliable.
    2. Only one radio frequency for entire embassy.
D. Transportation - use of personal vehicles.

VII. Care for the Injured

A. All injured were removed from the embassy within 8 hours.
B. Immediate need to locate patients, triage care, and relocate for evacuation.
C. Required repeated sweeps of health care facilities.
D. Critically injured: 8 ICU, 6 vents.
E. Evaluation for air evacuation.

VIII. Injuries Within the Embassy

A. Fractures of ribs, facial bones, extremities.
B. Open fractures of wrist, fingers, toes.
C. Burst fractures of the spine.
D. Unstable pelvic fractures.
E. Amputation of the jaw, proximal humerus, digits.
F. Globe injuries, retinal detachments.
G. Closed head injuries and concussions.
H. Lung contusions, TM perforations.
I. Extensive lacerations, tattooing from debris.

IX. Evacuation

A. Who, Where to, and When:
    1. South African flight - 17 hours after blast.
    2. Two US Air Force flights - 44 and 66 hours.
B. Problems:
    1. Communications
    2. Transportation
    3. Equipment

X. Results of Medical Rescue

A. Remarkably successful despite many logistical problems.
B. 25 patients evacuated.
C. One apparent death after rescue - body found in a morgue 5 days after the blast.

XI. Injuries:

A. Ocular injuries – More than 100 people had severe eye injuries or lost their sight completely.
B. Blast injuries:
    1. Health facilities overwhelmed with multiple trauma victims.
    2. General lack of appreciation of possible blast injuries.

XII. Problems With Identifying the Dead and Injured

A. At Healthcare Facilities:
    1. Multiple sites
    2. Large crowds
    3. Lack of automation
B. At Morgues:
    1. Lack of space and refrigeration
    2. Loss of identification
    3. Lack of automation

XIII. Recovery of the Dead

A. Completed by local staff.
B. All but one found within three days.

XIV. Mortuary Operations

A. Difficulties of locating and identifying the dead.
   1. Local embassy personnel required to repeatedly visit morgues to visually identify bodies and were untrained and unprepared.
B. Lack of refrigeration.
C. Interface with the Kenyan government:
   1. Inadequate forensic/medical examiners facilities.
   2. Death certificates.

XV. Fatal Injuries Within the Embassy

A. Basilar skull fractures (7).
B. Cardiac chamber or major vessel laceration (6).
C. Avulsion of the brain (7); herniated brain.
D. Diffuse subarachnoid/dural hemorrhage.
E. Liver pulpification; liver lacerations (3).
F. Bilateral proximal lower extremity amputation.
G. C1-7 fracture; T1-2 fracture/dislocation; T2 cord transection.
E. Avulsion of the scalp.

XVI. International Search and Rescue Response

A. Israeli Special Response Team.
B. French Response Team.
C. Fairfax County, Virginia Search and Rescue Team.
D. Office of Foreign Disaster Assistance.
E. U.S. Agency for International Development.

XVII. Other Considerations:

A. Collapse of the Ufundi building.
B. Beyond the initial response.
C. Community response.
D. Psychological stress.
E. V.I.P. visitors.
F. Public relations.

4 — EAST AFRICAN STANDARD, Friday, August 14, 1998

BOMB TERROR + + + BOMB TERROR + + + BOMB TERROR + + + BOMB TERROR + + +

US sabotaged relief efforts, says NGO

Standard Correspondent

Protect

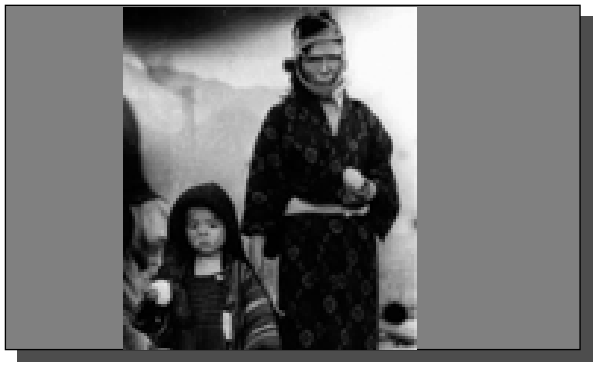
G. Funerals.
   1. Multi-cultural and ethnic groups had varying religious beliefs and requirements.
H. Quacks, charlatans, and shysters.

XVIII. Summary

A. Chaos, rumors and confusion in first hours.
B. Problems in response similar to other incidents.
    1. Transportation and triage
    2. Coordination
    3. Communication
C. Ethnic and cultural differences.
D. Security and command issues.
E. Logistical problems of multiple international groups.
F. Public relations and media coverage.

Natural Gas Pipeline Explosion in Mexico

Rogelio Pineda-Mejia, MD
Mexican Ministry of Health
Mexico City, Mexico



Natural Gas Pipeline Explosion in Mexico

Dr. Rogelio Pineda-Mejia
Mexican Ministry of Health

Dr. Rogelio Pineda is currently the Chief of the Epidemic Emergencies Department in the Epidemic Emergencies and Disasters Branch of the National Center for Epidemiological Surveillance. He has participated in relief operations carried out in Acapulco and the coast of Oaxaca (1997 - Pauline hurricane), Chiapas (1998, floodings), Puebla and Oaxaca (1999, earthquake and floodings), Puebla (2000, volcanic activity of the popo), and El Salvador (2001, earthquake).

Brief Narrative:

Although disasters can not be predicted, a good knowledge of the risk factor that could produce them is a very useful tool to organize health (and other) services to face them and diminish their impact.

Objective:

- To describe the methodology used in Mexico to prevent damages to the health of communities affected by disasters.

Outline:

- The health sector as a part of the Civil Protection System.
- The Sanitary Surveillance Committee.
- Risk diagnosis and tasks assignment.
- Medical care in disasters.
- Epidemiological surveillance in disasters.
- Management of temporal refugee camps.
- Management of health and risks information in disasters.

I. Gasoline Explosion in the Sewage System

A. Guadalajara, Mexico – site of the disaster.
B. Ten years after the event, this report is not intended to show results or place blame but merely demonstrate how it was handled and how it should have been handled with respect to Civil Defense and Health Services.

II. Classification According to the Nature of Disasters

A. The analysis of the production, causes and linking of disasters, among other characteristics, allows a useful classification system to be prepared to guide the study of destructive phenomenon.
B. This classification system consists of five types of phenomenon divided by their causes:
    1. Chemical
    2. Geological
    3. Meteorological
    4. Health
    5. Social

III. Chemical Disasters

A. They are intimately linked to society's complexity, industrial and technological development, human activities and the use of different forms of energy.
B. They affect largely large population and industrial centers.
C. This class includes:
    1. Fire
    2. Explosions
    3. Radiation
    4. Toxic gases
    5. Mass poisoning

IV. Background

A. On 20 April 1992 gas odors were detected in the Reforma District.
B. Civil Defense and firefighters detected gas in the sewage system.
C. An evacuation alert was issued in the event of explosion (sic).
D. The Municipal authorities proceeded to uncover manholes.
E. On 22 April at 8:00 the fire authorities report that the situation is under control.
F. Two hours later on the same day the first explosion in the sewage system took place, followed by 16 more affecting approximately 15 streets.

V. Consequences

A. 20 blocks were destroyed
B. 195 deaths
C. More than 1000 injured
D. 26 missing
E. DN-III is invoked
F. Rescue efforts commence

VI. Response

A. Coordination of the four health jurisdictions and the State Agency for the Prevention of Accidents and Disasters is established.
B. Victims are sent to all types of hospitals.
C. A command group is implemented to coordinate services.
D. An operations center is established.
E. Supervisory groups are formed under the coordination of central command.
F. Two brigades are formed, consisting of health personnel to evaluate damages.

G. Ice is obtained to conserve cadavers in the confined area, which was subject to high temperatures.
H. A committee is formed to guard and process the large number of donations and shelters provided by public and private organizations. Six commissions were formed:
    1. Material Resource Commission
    2. Health Service Commission
    3. Food Commission
    4. Shelter Commission
    5. Information Commission
    6. Finance Commission
I. Fifteen temporary shelters were implemented without having a reliable number of refugees (reports ranged between 3,000 and 6,000).
J. Personnel werre distributed throughout them.
K. Other temporary shelters were set up in various areas of the city.
L. The DGE sent personnel to work with SESA on the establishment of an epidemiological control system covering temporary refugees.
M. Approximately 30 refugees were detected.
N. Given the logistical management difficulties, people gather at the University of Guadalajara.
O. Institutional restrictions and deficient coordination between the local and state authorities impede a system from being implemented.
P. The hygienic conditions at the shelters were inadequate.
Q. There is an excess of personnel and a lack of coordination.
R. At 11pm the Environmental Contamination and Chronic Degenerative Disease authorities, together with SESA, proceed to take samples from the sewage system in the affected areas.
S. At 4am the next day the cause of the disaster was still unknown.
T. The media reported that the cause was Hexane.
U. Suspects include Pemex which, in turn, blames an oil factory.

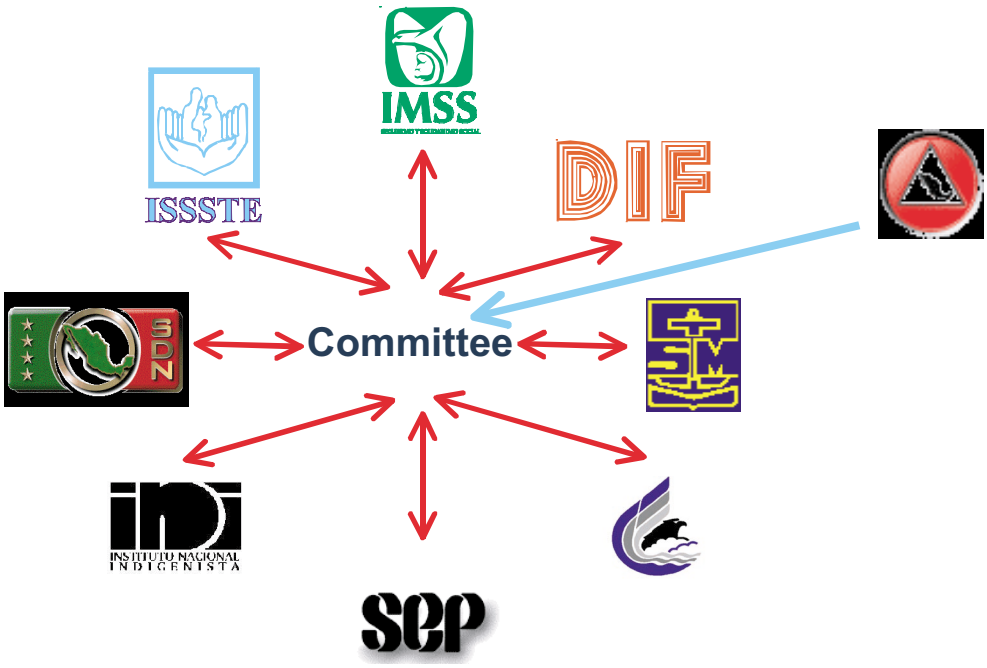
VII. Results

A. Money donations were channeled to the “Guadalajara” pharmacy to obtain necessary medicines, particularly against cholera.
B. Two cases of cholera were confirmed.
C. 32,633 tetanus shots were applied during the second day of vaccinations and tetanus prevention for the injured, hospitalized and shelter residents.
D. 1,065 units of blood were available.
E. The Chemical Disaster unit is formed under federal control by accident and disaster relief personnel.
F. The health problem is focused on the acute and/or chronic exposure to the hydrocarbons involved, mainly hexane.
G. However, the samples obtained from the soil and water in the affected area showed the presence of gasoline.
H. Blood lead levels were found to be elevated in 25% of the affected population (more than 2mg/dl).
I. The State Health Services were engaged to perform lead studies in the affected areas and treat children showing high levels.
J. Consideration was given to establishing a central sewage system and permanent health supervision to avoid future accidents.

VIII. What Should the Health Response be in the Event of a Disaster?

A. Anticipated
B. Immediate
C. Efficient

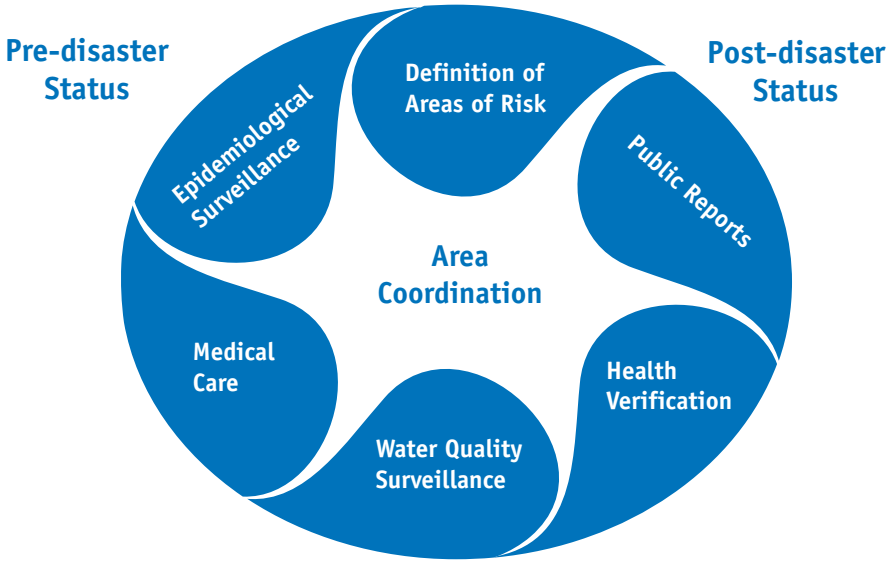
IX. Formation of a Permanent Health Supervisory Committee



X. Definition of Areas

A. Objective: Know who are the most vulnerable or affected by the threat or occurrence of an event.

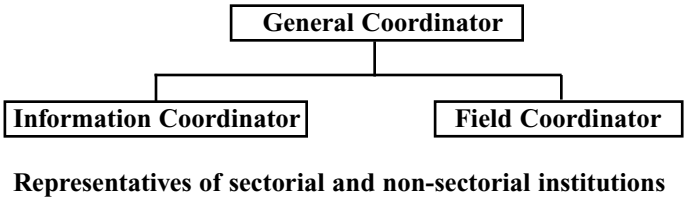
B. Duties of the Health Supervisory Committee:



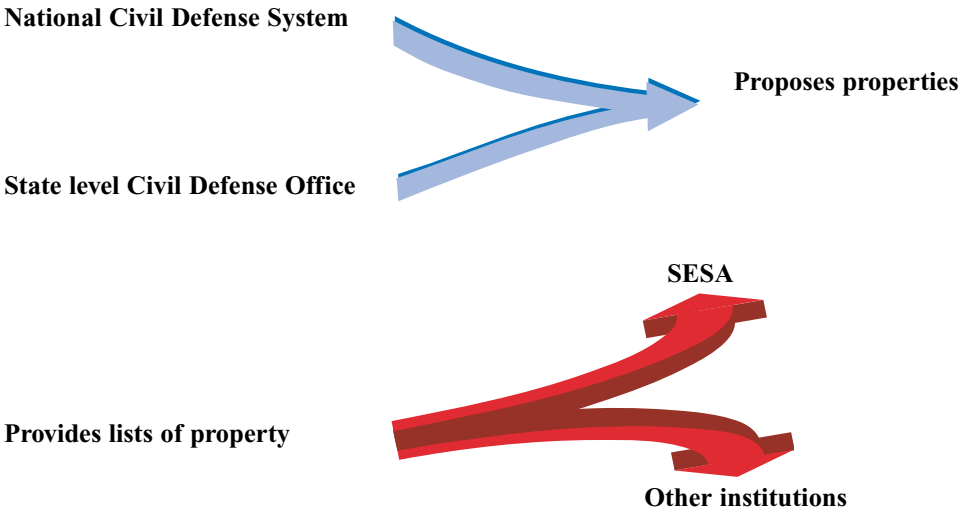
XI. Operational Needs

A. Regular committee meetings.
B. Assignment of duties to institutions.
C. Manage needs of intervention plans.
D. Follow-up on agreements.
E. Establish possible locations for operational centers.

XII. Composition of the Committee



XIII. Assignment of Temporary Shelters



XIV. Personnel to Support the Director of the Shelter

A. Social workers
B. Health personnel
C. Food personnel
D. Security personnel
E. Recreation personnel
F. Psychological personnel

XV. Duties of the Director of the Shelter

A. Coordinate all shelter activities.
B. Provide information regarding the shelter's general rules.
C. Manage needs of the support group.
D. Supervise compliance with the rules.

XVI. Supply of Consumables and Medicines

A. Objective:
   1. Avoid medical care facilities from running out of materials, limiting attention to the affected population.
   2. Create general medicine packages.
   3. Evaluate their content (increase or decrease).
   4. Establish supply/re-supply strategies.
   5. Gain daily knowledge of the expense incurred for each type of product.

XVII. Steps to be Taken in the Different Stages

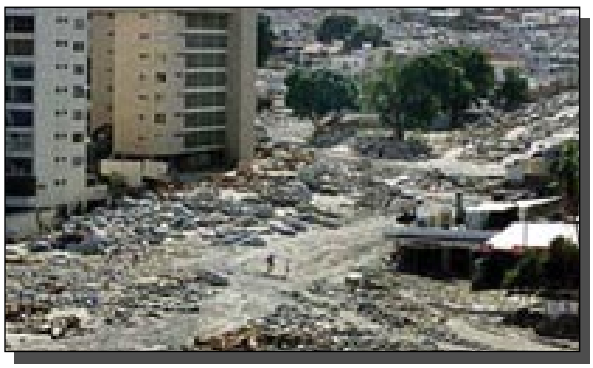
A. Before:
   1. Prepare intervention programs and plans.
   2. Establish agreements with and coordinate with sectorial and non-sectorial institutions.
   3. Assign responsibilities.
   4. Enable institutional personnel.

B. During:
   1. To the extent possible, activate pre-established intervention plans.

C. After:
   1. Medical assistance.
   2. Evaluation of damage to health infrastructure.
   3. Epidemiological surveillance.
   4. Health surveillance.
   5. Supervision of assigned duties.
   6. Compilation, tabulation and analysis of information.
   7. Public reports to the media and the population at large.

Toxic Exposures in Venezuela

Glenn Mitchell, COL, MC, USA
San Antonio, TX



Toxic Exposures in Venezuela

Glenn Mitchell, COL, MC, USA

San Antonio, TX

COL Mitchell served as US Southern Command Surgeon during 1998-2000 after attending the Army War College. He is a former hospital commander and medical center deputy commander, and has led the medical staff in the Sinai desert international peacekeeping force. He is board certified in both emergency medicine and preventive medicine and sits as vice chair for aerospace medicine on the American Board of Preventive Medicine. He was the founding chair of the disaster committee of the American College of Emergency Physicians and currently is a Task Force on International Emergency Medicine member. COL Mitchell is a Fellow of the American College of Emergency Physicians and of the Aerospace Medical Association. He is now the senior clinician for the US Army Medical Command.

Brief Narrative:

Healthcare providers and executives will enhance their knowledge of the scope of potential toxic exposures available at disaster sites that initially seem benign. The implications of substandard labeling and storage will be demonstrated. They will enhance their knowledge of the international efforts required to approach such complicated scenarios.

Objectives:

- To discuss the scope of toxic industrial exposures possible at disaster sites and describe the minimum necessary considerations for appropriate planning for such contingencies.

Outline:

- The scope of industrial toxic chemicals storage.
- The natural disaster in Caracas, Venezuela, during 1999-2000.
- The evolution of the toxic spill problem in the nearby port.
- The responses to actual and potential toxic exposures.
- The International efforts to assist with containment and clean-up.
- Implications for future planning for toxic industrial chemical releases.

I. Objectives

A. To demonstrate the potential for simple humanitarian medical missions to evolve suddenly into higher risk operations.
B. To discuss options for handling unusual and unanticipated chemical spills and potential toxic industrial chemical exposures.

II. Initial Situation

A. Summer 1999 Venezuela had extensive rains and mild to moderate flooding.
B. Additional heavy rains in early December triggered mudslides across northern Venezuela in mid-December.
C. US among many nations offering aid.

III. US Military Deployment

A. US Southern Command responsible for US military operations throughout Latin America and the Caribbean.
B. Parallel civilian efforts through USAID, Department of State, OFDA, and NGO/PVO's.
C. Crisis action plans made for emergency relief effort and follow-on engineering units to assist with critical road opening.

IV. Initial Health Service Support Assessment

A. Flooding in Venezuela - December 1999
B. Situation – Heavy rains triggered landslides and overflowing of main rivers and mountain streams in Venezuela, affecting in particular the coastal regions from the eastern State of Anzoategui to the State of Zulia on the west coast. *(see Figure 1)*
C. The Venezuelan floods:
    1. An estimated 30,000 dead.
    2. 15,000 injured. *(see Figure 2)*
    3. 150,000 left homeless. *(see Figure 3)*
    4. In historic context, 30,000 lives may have been lost; more than twice the total United States losses during the Korean War.
D. Challenges:
    1. The disaster hit one of Venezuela's most densely populated areas.
    2. Venezuela has no experience dealing with a disaster of this magnitude.
    3. Lines of communication were disrupted making air the only means for evacuation and distribution of supplies to effected areas.
E. Endemic diseases:
    1. Diarrheal diseases
    2. Malaria
    3. Dengue
    4. Encephalitis
    5. Meningitis
F. Anticipated negative factors – likely causes of increases in disease rates:
    1. Lack of potable water. *(see Figure 4)*
    2. Lack of sanitation.
    3. Contamination of food and water sources.
    4. Crowding of the displaced population.
    5. Stagnant pools breeding mosquitoes.
    6. Increasing rodent population.
G. Anticipated diseases worsened by the disaster:
    1. Communicable diseases:
        a. Respiratory infections
        b. Conjunctivitis
        c. Skin diseases

d. Cholera
e. Hepatitis
f. Meningitis

2. Vectorborne diseases:
   a. Malaria *(see Figure 5)*
   b. Dengue
   c. Encephalitis
3. Zoonotic diseases:
   a. Leptospirosis
   b. Rabies

H. Critical Actions;
1. Reopening the lines of communication.
   a. Evacuation
   b. Distribution
2. Responding to "The Second Wave".
   a. Lack of food, water, shelter, safety. *(see Figures 6&7)*
   b. CNN factor
   c. Politics
3. Preventing significant disease outbreaks.

V. Developing and Initiating Phase II of the Operation (60 days)

A. Actions – medical logistics.
1. 15 Days
   a. Life saving
   b. Assessing requirements
   c. Requisitioning supplies
   d. Requesting assistance
   e. Receiving
   f. Storing
   g. Distributing
   h. Accountability
2. 60 Days
   a. Receiving *(Figure 8)*
   b. Storing
   c. Distributing
   d. Accountability

B. Actions – preventive medicine
1. 15 Days
   a. Water and food surety.
   b. Mortality and morbidity rates prior to the storm.
   c. Where population effected has been relocated.
   d. Establish surveillance
   e. Educate public health
   f. Prioritize health threats.
   g. Plan response
2. 60 Days
   a. Water and food surety
   b. Mosquito control
   c. Rodent control
   d. Surveillance
   e. Public Health campaign
      1) Education
      2) Immunizations (as required)
   f. Execute response

VI. Plans In Progress

A. Command, control, communications (C3).
B. Medical regulating and patient tracking.
C. Veterinary services.
D. Dental services.
E. Laboratory services.
F. Psychological intervention.
G. NGO/PVO link ups (through PAHO).

VII. US Medical Response Priorities

A. Initial health assessment.
B. Immediate health care needs.
    1. HN-requested medicines and supplies.
C. SMART-PM (w/Vet) - Subject matter expert team.
D. Preventive medicine assistance.
    1. HN-requested medicines (coordinated with PAHO).
    2. PM units (if requested).
        a. Sanitation
        b. Epidemiology
E. Psychological consultation team (if requested).

VIII. Early Timeline

A. December 16-18, 1999 – massive mudslides in Caracas area.
B. December 18, 1999 – US officially asked for aid.
C. December 19, 1999 – JTF Fundamental Response – Set up at Maiquetia International Airport.
D. December 20, 1999 – 1st US relief supplies arrive.
E. December 21, 1999 – 1st US water plants working.
F. December 26, 1999 – Southcom command visit.
G. December 28, 1999 – 1st reports of medical problems seen in looters at La Guaira.

IX. Critical Locations

A. La Guaira
B. La Guaira Port Area *(see Figure 9)*

X. Chemicals in Port Area

A. Potassium permanganate
B. Nitrocellulose chips
C. Sulfuric acid
D. Chloric acid
E. Chlorinated Fluorocarbons (CFCs)
F. Acetone
G. Mercury (probably metallic)

XI. Threat Analysis

A. Agents:
    1. Phosgene (generated)
    2. Methyl mercury
    3. Fire/explosion
    4. Exposures
    5. Concentrated acid clouds

B. Effects:
    1. Respiratory damage
    2. Eye/skin damage
    3. CNS depression
    4. Long-term toxicity
    5. Physical hazards

XII. Protection Options

A. Mitigation of hazard.
    1. Dispersal of chemicals
    2. Fire suppression
B. Evacuation of danger zone. *(see Figure 10)*
    1. Residents
    2. US troops
    3. International airport
C. Personal protective equipment. *(see Figure 11)*
    1. Military chemical warfare gear
    2. Commercial equipment

XIII. Medical Surveillance

A. Monitoring
    1. Exposure at site
    2. Toxic release
    3. At port area
B. Pre- and post-surveys
C. Serum samples
D. Complete exams for exposed

XIV. Lessons Learned

A. Military equipment focused on identified threats.
B. Commercial off the shelf technology is complex, but helpful.
C. Entire team (military, civilian and international) is needed for effective response.
D. Timely access is still most important (assuming communication is OK).

XV. Final Lesson from the Past

"At the moment of execution, all prior plans become obsolete."

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Figure 5.

Figure 6.

Figure 7.

Figure 8.

Figure 9.

Figure 10.

Figure 11.

Training Programs for Trauma and Disasters; Experiences in Disaster Assistance

Gral de Brig MC Rafael Santana
Mexican Army and Air Force
Mexico City, Mexico

Training Programs for Trauma and Disasters; Experiences in Disaster Assistance

Gral de Brig MC Rafael Santana
Deputy SG
Mexico City, Mexico

Dr. Rafael Santana-Mondragón, Deputy Surgeon General, Mexican Army and Air Force, is in charge of initial medical assistance to natural disasters in collaboration with other Mexican federal and governmental agencies. His experiences in this field have been personal actuation in the last five years to disasters in Mexico, Central America and Venezuela.

Brief Narrative:

In case of natural disasters, the civil authority asks for a military response that includes health care assistance. The speaker will describe response procedures in countries with undeveloped conditions based on five years experience concerning events that happened in Mexico, Central America and part of South America. He will tell how they integrated medical teams, problems they confronted and how they were solved. He will also relate ways they coordinate efforts with other federal and governmental agencies. The assistance methods and activities are completely different from those occurring in developed countries.

Objectives:

- To describe the way the medical teams of the Mexican Army respond to support the civil authorities in case of disasters.
- To compare differences in these responses if they occur in developed or in underdeveloped countries.
- To discuss the way the different governmental and other agencies provide support to the civilian population in Mexico, in case of natural disasters.

Outline:

- Assistance to civil populations in Mexico.
  - Historical background
  - The DN-III-E Plan
- Mexican Army Medical teams to provide assistance to natural disasters.
  - The way they integrate them
  - The way they train them.
  - Collaboration with other organization.
- Experiences in Disaster Response organization and operation.
  - Events in Mexico.
  - Events in foreign countries.
- Task force (F.R.A.C.D.) to provide assistance to disasters.

I. Military Response to Support the Civilian Population in the Event of a Disaster

A. At the request of and in coordination with the relevant civilian authority.
B. Training
C. Experience

II. Objectives

A. We will have the capability to debate the manner in which government structures and other sectors in Mexico can support the civilian population in the event of a disaster.
B. We will be able to describe the manner in which the SEDENA medical corps take action during disasters to support civilian authorities.
C. We will be able to infer response differences depending on whether the emergency takes place in a developed or developing country.

III. Presentation

A. Historical background.
    1. The DN-III-E Plan.
B. Integration of medical teams.
    2. Training.
    3. Interaction with other organizations or teams.
C. Experiences in responding to disasters.
    1. In Mexico.
    2. In other countries.
    3. The so-called “Support Forces for Disasters”.

IV. Basic Principles

A. Evaluate the risks involved with adopting a disaster prevention policy.
B. Prevent and prepare for disasters.
C. Disaster prevention must be integrated into planning and development policy.
D. The consolidation of preventing and responding to disasters is a priority.
E. Early warning of a disaster is key to preventing it.
F. Prevention is more efficient if communities and organizations at all levels participate.
G. Society must recognize and analyze its proximity to risks and take preventive action.
H. We are all affected by disasters.
I. The poor and populated urban centers are more exposed to disasters.
J. Sustainable development reduces vulnerability to disasters.
K. Reducing the effects of natural disasters increases social stability.
L. Preventing disasters is better than responding to them.
M. Vulnerability may be reduced through education and enabling.
N. Technology for preventing and reducing disasters must be freely available.
O. Environmental protection is essential to prevention.
P. Each country is responsible for protecting its population and the international community is responsible for co-operating with countries. (“International Meeting on Disasters Reduction” May 1994, Yokohama, Japan)

V. DN-III-E Plan

A. Historical background:
    1. In May of 1966 the Pánuco river flooded and caused serious damage to Veracruz and Tamaulipas. The lack of organization to provide disaster support services to the civilian population was evident. The Government of the Republic ordered the Secretary for National Defense to prepare an assistance plan.
    2. It was updated in February 1972 and in 1985. It is conceived more as a systematic operations procedure than a plan and it is included as part of the National Civil Defense System, as a contribution of the Secretary for National Defense.

3. During the course of other reviews and updates, a name change was proposed but given the wide degree of acceptance and familiarity by authorities and the civilian population, the name has been maintained.

B. Acceptance–Familiarity

C. Relevant events:
   1. 1985: Earthquake in Mexico City.
   2. 1995: Earthquake in Colima and Jalisco.
   3. 1997: Hurricane Paulina – Oaxaca and Guerrero coast. Acapulco.
   4. 1998: Rain in the Chiapas coastal region.
   5. 1998: Multiple forest fires.
   6. 1999: Rain and floods in Oaxaca, Hidalgo, Puebla, Veracruz and Tabasco.
   7. 2000: Floods in Caico and Iztapaluca (urban neighbor of Mexico City).
   8. 2000: Eruption of "El Popo" volcano.
   9. Participation in other countries: Colombia, Honduras, Nicaragua, Venezuela, El Salvador.

D. Definition, purpose and scope:
   1. Provide assistance to the civilian population in the event of a disaster.
   2. The Mexican Army and Air Force assist the civilian population with the aim of saving lives, assets and the environment.

VI. Disaster

A. Loss of members of society, community infrastructure, their environment.

B. Imbalance in social structures which impedes normal activities and effects their well-being.

C. Natural or man-made event (many times both are involved).

D. Not all violent natural events, such as earthquakes, hurricanes or volcanic eruptions necessarily become disasters. Similarly, when a disaster occurs it is not always the exclusive result of the natural event, but rather also the result of what man has, or has not, done. In general it is a key factor.

E. Even small-scale disasters can rapidly become larger of they are not handled properly and if communications, transport, evacuation and other logistical aid is not facilitated. *(See Figure 1.)*

VII. Vicious Circles

A. Poverty

B. Ignorance

C. Corruption

VIII. Action Phases

A. Prevention (El Popo)

B. Aid (Evaluation) *(See Figure 2.)*

C. Recovery: Responsibility returned to civilian authorities. *(See Figure 3.)*

IX. Participants

A. Human resources

B. Material resources

C. Information

D. Operations

E. Plans

F. Legal

G. Transmissions

H. Information technology

I. Engineers

J. War materials

K. Health

L. Administration

M. Air Force

X. Planning Stage Advise Civilian Authorities Regarding:

A. Security
B. Search, rescue and evacuation
C. First aid and medical care
D. Location of shelters
E. Debris removal
F. Explosives availability
G. Food distribution
H. Maintaining law and order
I. Liaisons and communications
J. Resource concentration
K. Damage evaluation and reports

XI. Assistance to the Civilian Population in the Event of a Disaster

A. Coordination
B. There is a "National Civil Defense System"

XII. Inter-Agency Coordination

A. Geological events
B. Coordination with:
    1. SCT (Bridges and airports)
    2. SEMARNAP (dams and waterways)
    3. PEMEX and CFE (Hydro and thermo-electricity)
C. Meteorological events (SEMARNAP)
D. Chemical events (SECOFI, SEMARNAP, SCT)
E. Health events (SRIA. DE SALUD)
F. Social events (SEGOB)

XIII. Integration of Medical Teams

A. Initial response to a disaster by a team made up of:
    1. A commanding physician.
    2. A command team.
    3. Five cells formed by a physician, dentist, two nurses, two medical assistants.
    4. If the severity of the situation or the extension of the area involved so warrants, multiple cells will respond.

XIV. Disasters

A. An excessive response by medical aid personnel results in a debilitation of valued resources (personnel and material) while an insufficient response increases injuries and deaths.

XV. Medical Assistance

A. Specific
B. Quick
C. Where required
D. Balanced
E. Efficient

XVI. Plan DN–III–E Interactions

A. Advise civilian authorities regarding:
    1. Security
    2. Search, rescue and evacuation
    3. First Aid and medical assistance

4. Location of shelters
5. Debris removal
6. Explosives availability
7. Food distribution
8. Maintenance of law and order
9. Liaisons and communications
10. Resource concentration
11. Damage evaluation and reports
12. Contribution to the initial damage repairs

XVII. Medical Response

A. Initial stage
   1. The disaster area may be far from sources of aid, difficult to access and dangerous due to the disaster itself, thereby giving rise to delays in efficiently mobilizing medical and rescue personnel.

B. Stage I
   1. Usually medical assistance in the critical minutes following a disaster consists of first aid and is provided by survivors or victims with less serious wounds, but it is not very effective.

C. Stage II. Evaluation
   1. Define the nature and scope of the event.
   2. Provide security.
   3. Analyze the risk associated with rescuing victims.
   4. Identify and resolve consequences and risks generated (extinguish fires, etc).

D. Stage III. Medical personnel
   1. Measures to determine the number of victims.
   2. Evaluation and triage.
   3. Initial treatment and resuscitation.
   4. Specification of medical resources necessary for immediate attention.
   5. Propose and carry out evacuation.
   6. Evaluate medical and hospital resources for final distribution.

E. Stages of management and care
   1. Definitive care.
   2. Active chain of evacuation.
   3. Vaccinations.
   4. Prevention and control of epidemics.
   5 . Effective lines of supply.

XVIII. Training

A. The members of the teams (physicians, dentists, nurses and assistants) are from training schools where they have:
   1. Taken courses on efficient treatment of trauma (ATLS, PHTLS, RCP, etc.) and have been trained with respect to “Protecting the civilian population”.
   2. They have worked together.
   3. They have participated in multiple public health assistance initiatives.

XIX. Independent of Inter-agency Coordination, the Armed Forces Contributes With:

A. Engineers
B. Administration (providing “hot” food rations)
C. Transmissions
D. Military Police: Trained search and rescue teams

XX. Experience

A. In Mexico and other countries. *(See Figure 4.)*

B. Civil population assistance
1995-1999

	1995	1996	1997	1998	1999
National DN-III-E PLAN	**4**	**1**	**2**	**3**	**5**
Participants	**837**	**148**	**972**	**508**	**508**
Evacuations	**9083**	**498**	**1200**	**2000**	**750**
Medical and Dental Consultations	**24,036**	**922**	**20,090**	**49,567**	**10,726**
Treatments	**2324**	**98**	**2,122**	**2,602**	**600**
Surgeries	**24**	**3**	**6**	**0**	**0**

C. 2000 – Activation of the National DN-III-E Plan
1. Flooding of the Chaico Canal 3-26 June. State of Mexico (Mexico City metropolitan area).
2. Floods: 13 June – 5 July: Tabasco.
3. Hurricane Keith 27 September – 21 October: Quintana Roo, S.L.P., Tabasco, Tamaulipas, Veracruz.
4. Popocatepetl volcano activity: 16-27 December: Morelos, Puebla.

D. Participation in other countries
1. The same procedures employed in Mexico are used
2. Results: SATISFACTORY

E. Participation using the DN-III-E Plan in other countries
1. 1996: Nicaragua and Costa Rica
2. 1998: Honduras, Nicaragua, Guatemala, Bolivia
3. 1999: Colombia, Venezuela

XXI. Support Forces for Disasters *(See Figures 5-14.)*

A. We participate as we can

B. Applying our experience

C. Sympathy

D. Solidarity

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Figure 5.

Figure 6.

Figure 7.

Figure 8.

Figure 9.

Figure 10.

Figure 11.

Figure 12.

Figure 13.

Figure 14.

USAF
International Health Specialist Program

Brig Gen Dan L. Locker, USAF, MC, CFS
81st Medical Group
Keesler AFB, MS

USAF
International Health Specialist Program

Brig Gen Dan L. Locker, USAF, MC, CFS
Commander, 81st Medical Group
Lead Agent, DoD Health Services Region

Brig Gen Locker is the Lead Agent of DoD TRICARE Region IV and Commander of Keesler Medical Center, a tertiary referral center with five GME programs. He is responsible for oversight of all health care for over 600,000 beneficiaries in the Gulf Coast area through direct care and contract managed care with an annual cost of over $58M. He is also responsible for coordination of disaster response for National Disaster Medical System of the central gulf region. A board certified general surgeon, he was instrumental in the design and implementation of the Air Force rapid response Flying Ambulance Surgical Teams (FAST) and in expanding the modular response team concept. He is active in Air Force readiness/disaster planning and force protection.

Brief Narrative:

The U.S. Air Force International Health Specialists (IHS) Program was stood up in 2000 as a partner program to the Air Force Foreign Area Officer Program. IHS personnel are expected to become proficient in a language and culture other than English/US, and to be knowledgeable of the political/military/economic/medical aspects of the country and region of their expertise. The IHS personnel will be assigned to support unified command surgeons in the healthcare aspects of the Theater Engagement Plan.

Objectives:

- To describe the goals of International Health Specialists Program.
- To list a number of roles of personnel in the healthcare aspects of the Theater Engagement Plan.
- To explain the mutual benefits of partnering with international military medical colleagues.

Outline:

- Background
  - US Air Force medical policy and doctrine
  - Evolution of increased operational tempo (OPTEMPO) for military operations other than war (MOOTW)
- Concept of operations
  - Support for CINC Surgeons Theater Engagement Plan
  - Familiarization with Joint Coalition, International Organizations, and Civilian/Military Operations/Collaborations
- Structure
  - Teams assigned to the areas of responsibility
    - HQ oversight
    - Total Force Liaison
  - Active Duty component
  - Guard component
  - Reserve component
    - Schoolhouse representatives
- Criteria and scope of training
  - Availability for Assignment
    - Qualifications in Primary Medical Field
    - Foreign Language Proficiency/Aptitude
    - Joint/International Experience
  - Training
    - Language culture
    - Joint/Interagency
    - Masters in Public Health/International Studies

I. Overview

A. Air Force Doctrine and Joint Vision
B. Air Force Medical Service (AFMS) Mission and Vision
C. Air Force International Health Specialist (IHS) Program
    1. Built on template of USAF Foreign Area Officer program
    2. A new Core Competency for the AFMS
    3. IHS / USUHS partnership – USU as Triservice epicenter and academic base
D. The future

II. AF Doctrine

A. Peacetime engagement & crisis response
    1. Humanitarian Assistance/Disaster Relief
    2. Counterdrug & Counterterrorism Operations
    3. Rescue/Noncombatant Evac Ops (NEO)
B. Deterrence & contingency operations
    1. Aerial Occupation (e.g., OSW, ONW)
    2. Show of force (On Call AEWs)
    3. Forced entry, raids, coercion
C. War winning operations
    1. Destruction, disruption, deployment
    2. Sustainment, information operations

III. AFMS Vision

A. National security strategy
    1. Enhance security
    2. Bolster America's economic prosperity
    3. Promote democracy abroad
B. National military strategy
    1. Shape
    2. Respond
    3. Prepare
C. Air Force strategic vision
    1. Global vigilance
    2. Reach
    3. Power

IV. AFMS Strategy

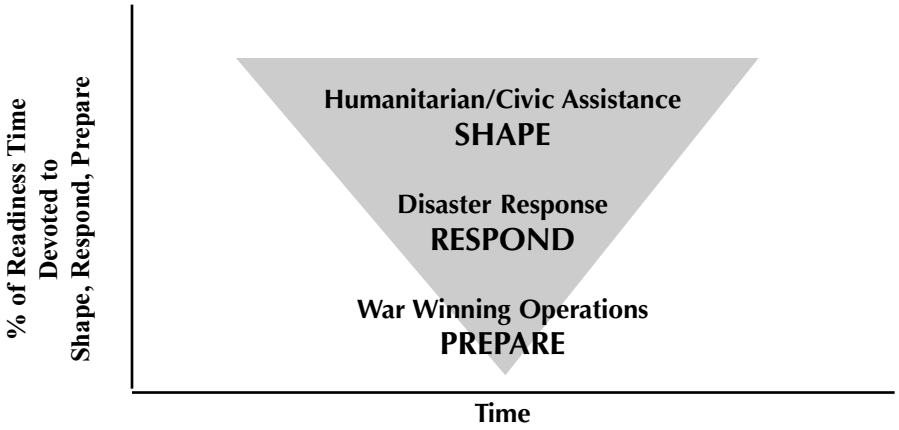
A. Assure medical readiness
B. Build healthy communities
C. Strategic Initiatives
    1. Medical readiness
    2. Employ TRICARE
    3. Tailored force
    4. Build healthy communities
D. Operational Tasks (AFMS Core Competencies)
    1. Provide medical support to employed forces
    2. Operate a managed care system
    3. Prevent disease, promote health & fitness
    4. Optimize health, safety & performance
    5. Provide a responsive & sensitive health care atmosphere

V. New AFMS Core Competencies

A. International Health Specialist skill sets will facilitate:
   1. Medicine around the world.
   2. Military medical forces' involvement in the full-spectrum of national/international interaction.
   3. Building coalitions through partnerships and training.

B. Traditional readiness platforms:

C. International Health Specialist:



D. Synergy of IHS and traditional readiness:

E. Result
   1. Shape *(See Figure 1.)*
      a. Vigilance
      b. Humanitarian/civic assistance
   2. Respond *(See Figures 2-5.)*
      a. Reach
      b. Disaster response
   3. Prepare *(See Figures 6&7.)*
      a. Power
      b. War winning operations

VI. The Business of the AFMS

A. Medical readiness
   1. Provide optimal operational support to three major functional areas.
      a. War winning operations
      b. Humanitarian & civic assistance
      c. Disaster response
B. Peacetime healthcare
   1. Provide quality healthcare to our beneficiaries in a fiscally-sound manner.
   2. Ensure and improve health and fitness of our beneficiaries by building healthy communities.

VII. International Health Specialist – Where We Fit

VIII. Medics as the "Tip of the Spear:" *Supporting Democracy with Medical Missions*

A. First US Military in Nicaragua in 17 years :
   1. June 1996: Pediatrics
   2. July 1997: Established Microbiology Lab
   3. August 1998: Ophthalmology
   4. Summer 2000: Multispecialty peds/Medical
B. US Military HUMRO support after Hurricane Mitch- Mil to Mil relations reestablished!
C. Education and Public Health in former Soviet Union
D. MEDFLAGs to AFRICA

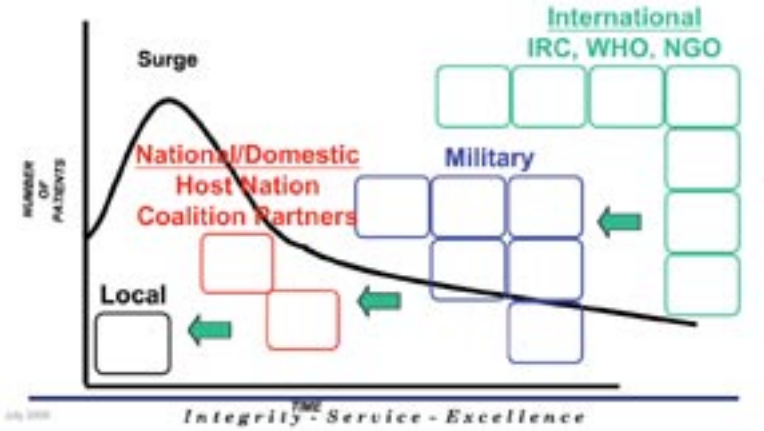
IX. Humanitarian Medical Missions: Medics Building International Bridges

A. High demand worldwide
B. SOUTHCOM example:
   1. 72 MEDRETE missions to Latin America since 1994 (See Figure 8.)
      a. 20 in FY 98
      b. 16 in FY 99
   2. 180,000+ patients seen
   3. 4,800+ surgical procedures
   4. Over 400 Triservice and Total Force medics trained

X. USAF Medical Tools for Disaster Response

A. CCATT, ECCT, MFST, EMEDS - unique tools.
B. SPEARR - disaster response "force package".
C. Other "small-footprint" teams, like MOST, are in stages of development and maturity.
D. Medical, nursing, public health needed.
E. Readiness skills taught to Joint, Total Force, and Coalition Nation medics as deployable courses.

XI. Disaster Response Should be a Tiered & Tailored International Coalition Effort



XII. Small Portable Expeditionary Aeromedical Rapid Response (SPEARR)

A. Deployable within 2 hours *(See Figure 9.)*
B. Flexible -- highly mobile (one pallet) *(See Figure 10.)*
   1. Sling loadable -- not tied to a forklift
C. Relatively broad scope of care
   1. Initial Disaster Medical Assessment
   2. Emergency/Flight/Primary Medicine
   3. Emergency Surgery (General/Orthopedic)
   4. Critical Care/Transport Preparation

XIII. SPEARR/EMEDS/AFTH/ Capability

Time Phased Patient Responsiveness

	SPEARR	EMEDS	•Robust Primary Care •Disaster Response +10	•Prevention •Primary Care •Acute Intervention +25
PERSONNEL	10	25	56	87
PALLETS	1 (Trailer)	8	14*	20*
BEDS	3**	4**	10	25
PAR	500	500-2000	2000-3000	3000-5000
MAJOR TRAUMA SURGERIES	10 or 20 in 48 hrs	10 or 20 in 48 hrs	10 or 20 in 48 hrs	20 or 40 in 48 hrs
NON-OPERATIVE RESUSCITATIONS				

•Core Infrastructure for Specialty Sets

Add Specialty Sets

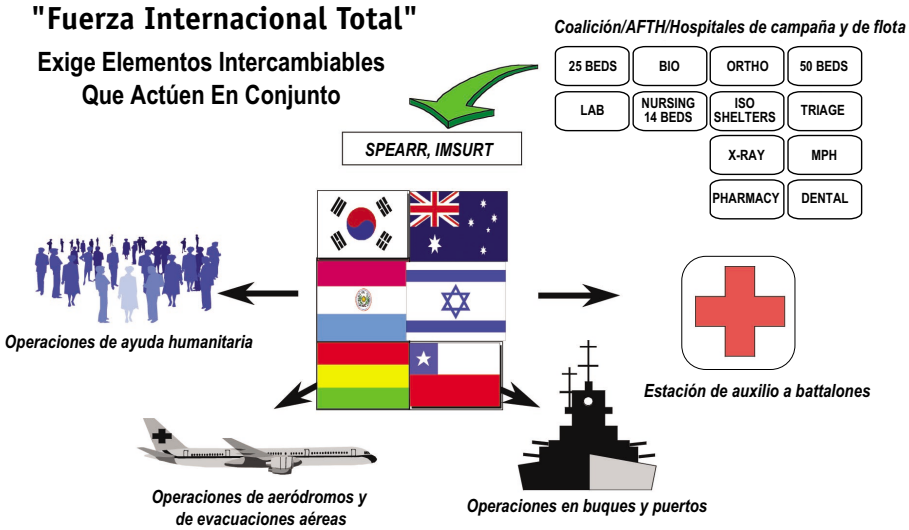
XIV. SPEARR/EMEDS/AFTH Modular Approach

XV. Joint Military Ops, Changing Focus – Picking Up Speed

A. 1949 - 1989: 40 years 10 Joint Deployments *(See Figure 11.)*

B. 1989 - 1999: 10 years 40 Joint Deployments *(See Figure 12.)*

XVI. Multiple Support Roles - Global Medical Operations



XVII. International Education: Fostering Regional Response & Potential Partners

XVIII. AFMS Disaster and Trauma Global Health Program

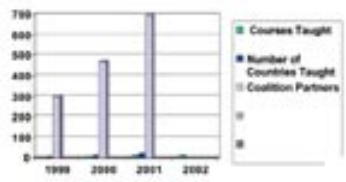
A. Course: Leadership Course in Regional Disaster Response and Trauma System Management
B. First formal E-IMET September 1999
C. Six-day "Train the Trainer" course
D. Taught by ten U.S. Mobile Education Team instructors
    1. Total Force, officers, and enlisted
    2. All credentialed in trauma management and disaster response
E. 30 - 42 students per course
F. Over 14% of the world will be trained by close of FY01
    1. 17 countries of the 120 eligible
    2. 14 countries scheduled for FY02

XIX. Leadership Course in Regional Disaster Response and Trauma System Management

A. Course overview:
    1. Course curriculum
        a. 76 training sessions.
        b. Practical skills and field exercises.
        c. Refugee camp scenario, final disaster scenario, model lab.
        d. Animate lab with basic emergency procedures and advanced surgical techniques.
    2. Extensive translation resources
        a. Simultaneous verbal translation.
        b. Comprehensive syllabus translated into host country language of choice.
    3. Target audience is teams of healthcare providers, surgeons, emergency room physicians, nurses, public health providers, medical planners.
    4. Emphasis on Regional Involvement and "Training the Trainer"
B. Global engagement
    1. Basic & advanced
    2. Disaster/trauma
    3. Skills session
C. Coalition teamwork
D. Joint service

XX. Course Outcome Measurements

A. Trained 17 countries in 22 months
B. Trained 700 coalition partners
C. All host countries have requested repeat courses
D. Disaster-trauma health care assessment of 10 countries
E. Increase of 20-30% on test scores (pre-post tests)
F. 5 disaster/trauma courses taught by host countries
G. Over 100 trained as first line disaster responders (self aid & buddy care)
H. African Stability Trauma Center



XXI. Deployable Disaster Response course goals summary

A. Cultivate joint-coalition skills/exchanges - interoperability.
B. Develop coalition doctrine for medical response - access.
C. Utilize and share existing training courses - goodwill.
D. Exercise regional response capability.
E. Formalize agreements to become: “Coalition Partners For Health”.
F. EUCOM CINC priority
    1. “Defense Cooperation” implies working / training together instead of “Security Assistance”… implies let us show you how to do it.
G. PACOM – CINC priority
    1. “Build Competent Coalition Partners”.

XXII. Globally Engaged Medics - International Health Specialist (IHS) Program

A. Air Force Surgeon General Initiative
    1. Partnership with Air Force Foreign Area Officer (FAO) program
B. Medics trained for specific CINC Areas of Responsibility (AORs)
    1. Culture
    2. Language
    3. Political - military issues
    4. Medical planning

XXIII. IHS Strengthens Chief of Staff of the Air Force Support for Unified Commanders

A. Built on template of AF Foreign Area Officer program.
B. Regionally focused Total Force medical readiness leaders.
C. Medics as the “Tip of the Spear” for global engagement.
D. Supports Joint Vision 2010 focused logistics.
E. Optimizes mil-mil and mil-civ host nation interface.
F. Enhances medical force protection.
G. Supports CSAF initiative of 10% of AF officers proficient in 2nd language by 2005.

XXIV. IHS Member Criteria

A. Qualified in primary healthcare job.
B. Retainable/promotable/professional military education/worldwide qualified.
C. Cultural experience in specific regions.
D. Language proficiency
E. Academic training
    1. Degree and non-degree courses in language, international studies, regional medical topics
    2. Regional interagency familiarization

XXV. International Health Specialist "In The Beginning"

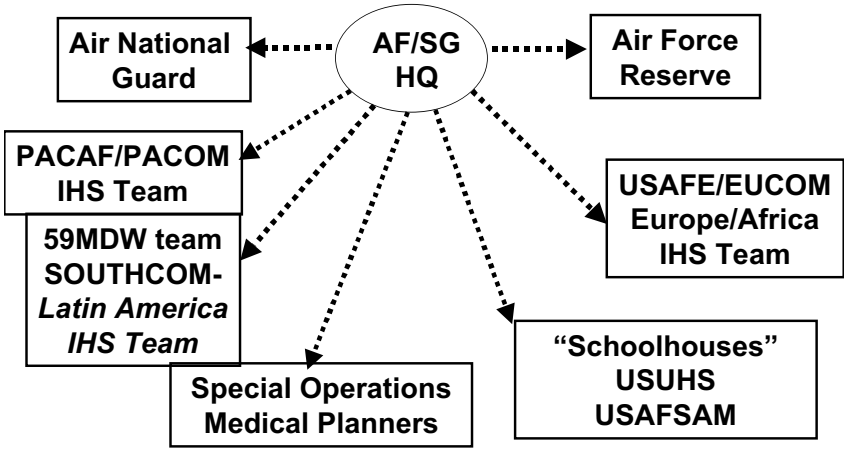
A. Introduce IHS program "In The Beginning"
B. Tech School
C. College (ROTC)/Post Graduate/Professional Military education
D. Air Force Academy
E. Health Professional training programs
   1. USUHS- Medical School, Nursing School, short courses
   2. HPSP, officer training orientation courses
   3. USAFSAM, Air University

XXVI. IHS Applicant Languages – (36 Total Languages)

African	1	Hebrew	2	Mandarin	5
Arabic	5	Hindi	1	Norwegian	1
Armenian	1	Hungarian	3	Polish	1
Cambodian	1	Ilocano	1	Portuguese	10
Cantonese	2	Indonesian	1	Rumanian	1
Chinese	1	Italian	21	Russian	8
Danish	2	Japanese	10	Spanish	125
Farsi	1	Korean	8	Tagalog	6
Finnish	1	Lao	1	Thai	3
French	49	Lithuanian	1	Turkish	4
German	62	Luganda	1	Ukrainian	2
Greek	3	Luxembourgais	1	Vietnamese	7

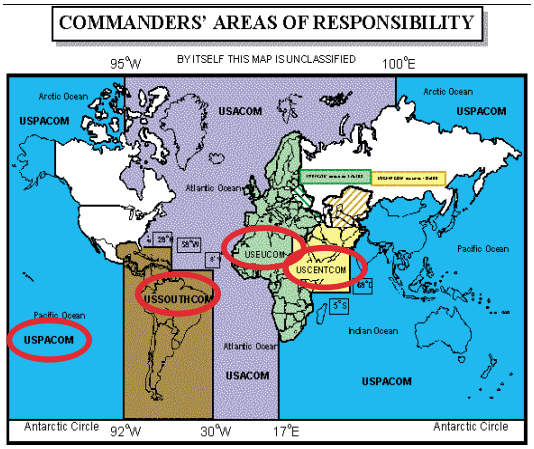
XXVII. IHS Personnel

XXVIII. CY01 Organization



XXIX. Globally Engaged Medics

A. Unit Type Codes (UTCs) for each IHS Team
B. Special Experience Identifiers (SEI)
   - 77 have been awarded
C. Four IHS Teams Programmed for FY01-02
   1. Europe and Africa (EUCOM)
   2. Latin America (SOUTHCOM)
   3. Middle East, East Africa, SW Asia (CENTCOM)
   4. Pacific (PACOM)
D. Four Programmers for Special Operations Command (SOCOM)
   1. Not geographically displayed
E. Medical partnerships with host countries



XXX. IHS can Facilitate Title 10 Programs for DoD Medical Global Engagement

A. The majority of Medical Global engagement activities are not funded "out of hide."
B. Title 10/ Non-Defense Health Program Funding:
   1. Traditional CINC Activities (TCA)
      a. Symposia, subject matter expert exchanges
   2. Humanitarian and Civic Assistance (HCA)
      a. Medical Readiness Training Exercises (MEDRETEs) and MEDFLAGS
   3. Humanitarian Assistance (HA)
   4. International Military Education & Training (IMET)
      a. Deployable courses taught by Mobile Education Teams (METs)
   5. LATAM Coop
   6. Foreign Military Sales (FMS)

XXXI. Educational Resources for AFIHS

A. DoD
   1. USUHS
   2. Naval Postgraduate School,
   3. AMEDD School / International Affairs
   4. Marshall Center
   5. Foreign Service Institute
B. USAF
   1 USAF Foreign Area Officer Program
   2. US Air Force Academy
   3. USAF School of Aerospace Medicine (USAFSAM)
   4. USAF Special Operations School
   5. Air University
   6. Inter American Air Force Academy (IAAFA)
C. Centers of Excellence
D. Civilian Universities

XXXII. USUHS / AFIHS Partnership

A. USUHS as Triservice Epicenter
B. Academic base for coordinating the training of IHS team members, Special Experience Identifier applicants, others
C. Hub for networking with joint, international military medical, interagency, and Non-Governmental Organization and International Organization colleagues
D. AFIHS academic component located at USUHS
   1. Col Vicky Fogelman, IHS Academic Program Director, on station Feb 2001

2. Faculty member, Dept. of Preventive Medicine Course director for 3 courses for AY 01-02
3. Synergy with Depts of Military and Emergency Medicine, Preventive Medicine, School of Nursing, and other areas of the University
4. Can assist Associate Dean for Clinical Affairs as host for international visitors, students
5 Developing International Health concentration in MPH Program
6. Incorporate medical students on international global engagement opportunities

E. IHS/ USUHS Academic Program Director responsibilities
1. IHS / MPH student advisor
2. Curriculum development / faculty member
3. Outcome studies
4. Network with other Centers of Excellence

XXXIII. IHS Applicant Comments Reflect "Retention Tool" Potential

A. "Sense of Mission" restored
1. "This is what I entered the Air Force to do…"
2. " I would stay on active duty for a program like this…"
3. "This is what I've prepared for my whole life.."
4. "This program provides an opportunity to provide the purest form of medical care to humanity…"

XXXIV. The Future

A. Solidify relationship with AF Foreign Area Officer Program under Secretary of the AF for International Affairs
B. AFMS program synergy with Readiness, GME
C. Total Force (Active Duty, Reserve, National Guard)
D. Training requirements focused and clarified
E. USUHS component the lead academic base
F. Triservice opportunities explored
G. Outcomes studies / customer surveys
H. Civilian partnerships expand

XXXV. Air Force Medical Service Vision for Medical Readiness: Promoting Global Health with Air Force International Health Specialists

A. War Winning *(See Figure 13.)*
B. Humanitarian & Civic Assistance *(See Figure 14.)*
C. Disaster Response and small scale contingencies *(See Figure 15.)*

XXXVI. International Health Specialist Website: https://www.afms.mil/afihs

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Figure 5.

Figure 6.

Figure 7.

Figure 8.

Figure 9.

Figure 10.

Figure 11.

Figure 12.

Figure 13.

Figure 14.

Figure 15.

Fundamental Principles of Disaster Medicine

Dr. Craig Llewellyn, COL, MC, USA (Ret.)
Uniformed Services University of the Health Sciences
Bethesda, MD

Fundamental Principles of Disaster Medicine

Dr. Craig Llewellyn, COL, MC, USA (Ret.)
Chair, Military Emergency Medicine Department
Uniformed Services University of the Health Sciences
Bethesda, MD

Dr. Craig Llewellyn began his medical career as a U.S. Army Captain in 1963 and retired as a Colonel in 1987. Since 1982, he's been Professor and Chair, Department of Military and Emergency Medicine and Professor, Department of Preventive Medicine and Biometrics at USUHS. A graduate of the Industrial College of the Armed Forces, the Medical Officers Basic and Advanced Courses, and Armed Forces Staff College, his career assignments included Commander, U.S. Army Biomedical Laboratory, Manager, Combat Casualty Care Research Program, and Chief, Department of Epidemiology, WRAIR. His military awards and decorations are numerous, including the Defense Distinguished Service Medal, Legion of Merit, and the Bronze Star.

Brief Narrative:

Disaster medicine is based on the regular practice of medicine, but must include a recognition of the impact of disaster types, related injury, illness and public health patterns, the integration of medicine and public health into an overall emergency management plan, and the necessity of planning and practice exercises involving local, regional and national government and volunteer agencies. The panel members will provide insights into the attendant problems based on personal experience and current policies.

Objectives:

- To list the nosology of disasters, natural and other.
- To describe the medical, public health, and injury profiles associated with each type of disaster.
- To define the requirements for fully integrating the medical and public health response into the overall emergency management structures and disaster response plans at local community, state and national levels.

Outline:

- Disaster nosology:
  - Natural disasters
  - Manmade disasters
- Patterns of medical and public health problems associated with specific types of disasters:
  - Natural disasters.
  - Manmade disasters.
- Emergency management/disaster response organization and operation:
  - Mexico – border communities, states, federal.
  - USA – border communities, states, federal.
  - Incident command/management.
- Medical and public health organization and integration into overall emergency management/disaster response.
  - Local community.
  - State and federal response

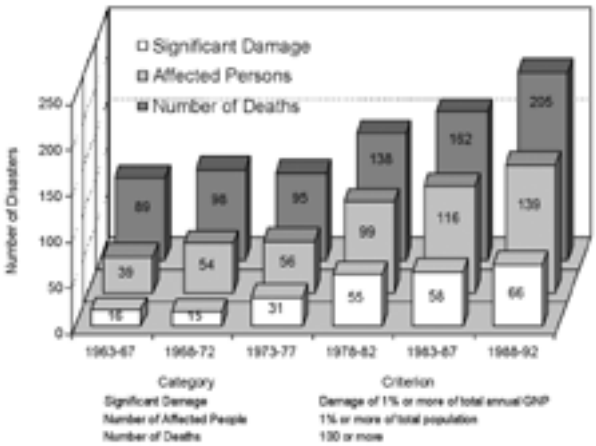
I. What is a Disaster?

II. Classification of Disasters

A. Natural disasters
   1. Sudden impact or acute onset (e.g., geological and climatic hazards such as earthquakes, tsunamis, tornadoes, floods, tropical storms, hurricanes, cyclones, typhoons, volcanic eruptions, landslides, avalanches, wildfires). This category also includes epidemics of water-, food-, or vector-borne diseases and person-to-person transmission of diseases.
   2. Slow or chronic-onset (e.g., drought, famine, environmental degradation, chronic exposure to toxic substances, desertification, deforestation, pest infestation [e.g., locusts])

B. Disasters generated by people (human-generated)
   1. Industrial/technological (e.g., system failures/accidents, chemical/radiation, spillages, pollution, explosions, fires, terrorism)
   2. Transportation (vehicular)
   3. Deforestation
   4. Material shortages
   5. Complex emergencies (e.g., wars and civil strife, armed aggression, insurgency, and other actions resulting in displaced persons and refugees)

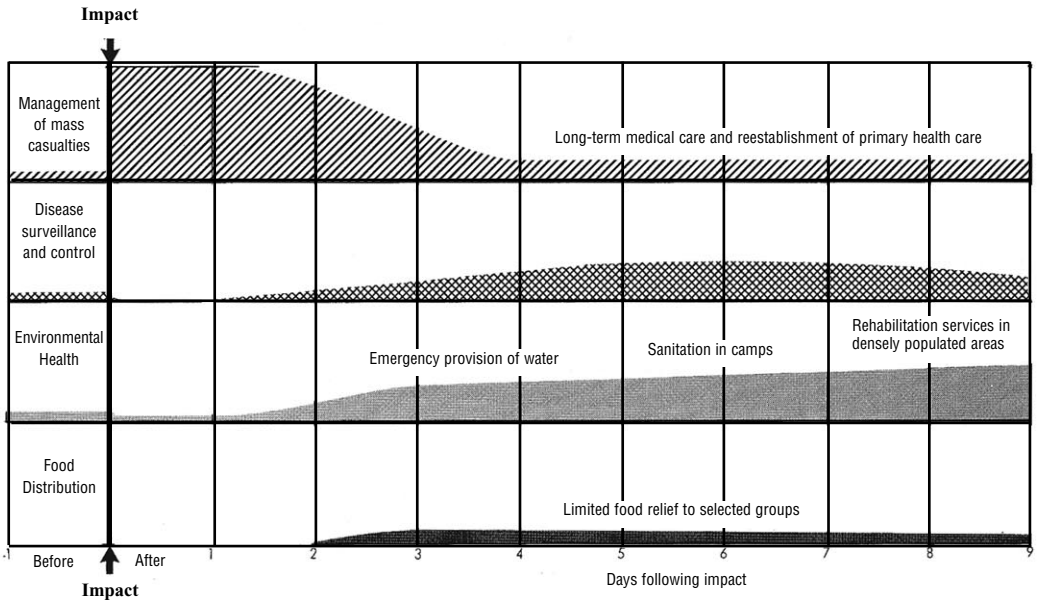
III. Major Disasters Around the World, 1963–1992
Significant Disasters Based on: Damage, Affected Persons, Deaths.



IV. Incidence of Medical Problems Following Disasters

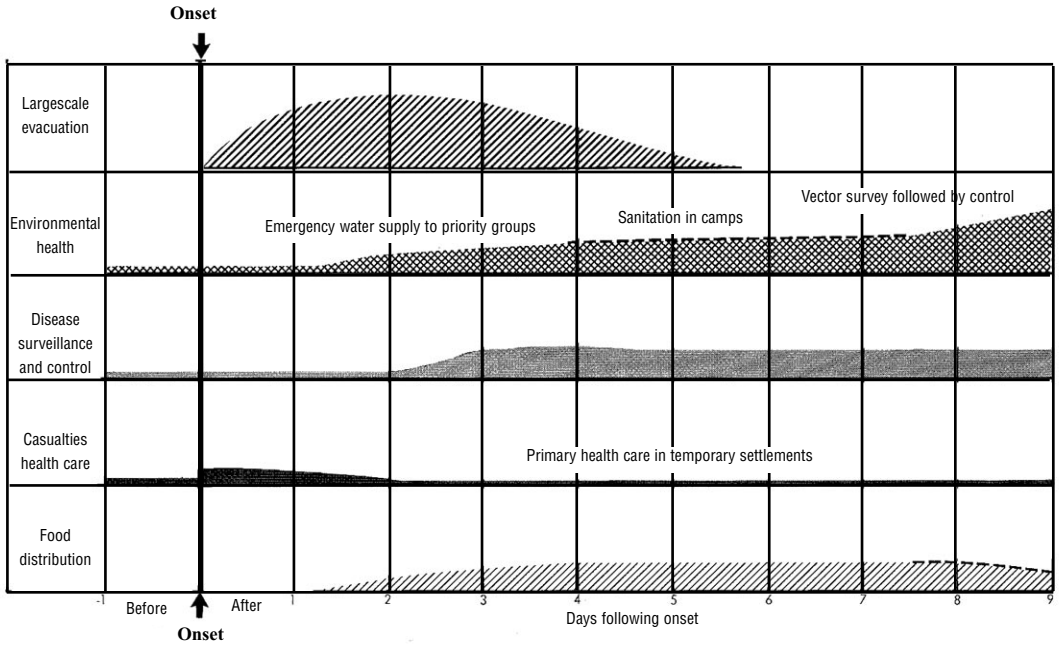
	Deaths	Severe injuries	Risk of disease	Food scarcity	Population movement
War	High	High	Variable	Variable	High
Terrorism	Moderate	Moderate	No	No	No
Air crash	High	Rare	No	No	No
Industrial accident	Variable	Variable	Possible	No	Possible
Earthquake	Variable	Variable	Possible	Possible	Possible
Drought	Variable	Low	Yes	Yes	Possible
Cyclones/typhoons	Moderate	Moderate	Possible	Possible	Possible
Flood	High	Low	Yes	Yes	Possible

V. Changing Needs and Priorities Following Earthquakes. *



* PUBLIC DOCUMENT: Emergency Health Management After Natural Disaster – Scientific Publication No. 407, Pan American Health Organization. World Health Organization, Washington DC, 1981

VI. Changing Needs and Priorities Following Floods/Sea Surges. *



* PUBLIC DOCUMENT: Emergency Health Management After Natural Disaster – Scientific Publication No. 407, Pan American Health Organization. World Health Organization, Washington DC, 1981

VII. Matrix of Effects of Natural Disaster on Environmental Health Services

Service	Most Common Effects on Environmental Health	Earthquake	Hurricane/ Tornado	Flood	Tsunami
Water supply and waste water disposal	Damage to civil engineering structures	●	●	●	○
	Broken mains	●	◑	◑	○
	Power outages	●	●	◑	◑
	Contamination (biological or chemical)	◑	●	●	●
	Transportation failure	●	●	●	◑
	Personnel shortages	●	◑	◑	○
	System overloading (due to shifts in population)	◑	●	●	○
	Equipment, parts & supply shortages	●	●	●	◑
Solid waste handling	Damage to civil engineering structures	●	◑	◑	○
	Transportation failures	●	●	●	◑
	Equipment shortages	●	●	●	◑
	Personnel shortages	●	●	●	○
	Water, soil and air pollution	●	●	●	○
Food handling	Damage to food preparation facilities	●	●	◑	○
	Transportation failure	●	●	●	◑
	Power outages	●	●	◑	◑
	Flooding of facilities	○	●	●	●
	Contamination/degradation of relief supplies	◑	●	●	◑
Vector control	Proliferation of vector breeding sites	●	●	●	●
	Increase in human-vector contacts	●	●	●	◑
	Disruption of vector-borne disease control programs	●	●	●	●
Home sanitation	Destruction or damage to structures	●	●	●	●
	Contamination of water and food	◑	◑	●	◑
	Disruption of power, heating fuel, water supply waste disposal services	●	●	●	◑
	Overcrowding	○	○	○	○

● - Severe possible effect
◑ - Less severe possible effect
○ - Least or no possible effect

VIII. In Disasters, the Division of Labor and Resources Changes

A. In disasters there are often conditions that may make the traditional division of labor and resources, characteristic of routine emergency management, unsuitable for disaster response.
   1. Disasters may put demands on organizations, requiring them to make internal changes in structure and delegation of responsibilities.
   2. Disasters may create demands that exceed the capacities of single organizations, requiring them to share tasks and resources with other organizations that use unfamiliar procedures.
   3. Disasters may attract the participation of organizations and individual volunteers who usually do not respond to emergencies.
   4. Disasters may cross jurisdictional boundaries, resulting in multiple organizations being faced with overlapping responsibilities.
   5. Disasters may create new tasks for which no organization has traditional responsibility.
   6. Disasters may render unusable the normal tools and facilitates used in emergency response.
   7. Disasters may result in the spontaneous formation of new organizations that did not exist before.

IX. Other Tasks

A. Other examples of tasks that may be unique to disasters include:
   1. Warning and communicating with the public.
   2. Shelter and feeding of displaced persons.
   3. Evacuating neighborhoods.
   4. Evacuating hospitals, prisons, nursing homes, and psychiatric facilities.
   5. Coordinating volunteers.
   6. Acquiring and allocating unusual resources .
   7. Dealing with mass animal carcasses.
   8. Dealing with livestock or family pets that had to be left behind or sheltered (Drabek, 1986: 116).
   9. Procedures for condemning damaged buildings (Moore, 1958: 84).
   10. Disposing of unclaimed valuables and merchandise found in the rubble at the scene (Moore, 1958: 85).
   11. Control of air traffic (Seismic Safety Comm. 1983: 15, 45, 70, 75; Drabek, 1981: 179).
   12. Disposing of large amounts of donations (Fritz, 1956).
   13. Controlling emergency vehicle traffic, so access routes are not blocked by emergency vehicles whose drivers have parked and left them (Hamilton, 1955: 50; Drabek, 1968: 7, 11, 19; Cohen, 1982a: 102; Morris, 1982).

B. Checking on hospitals, nursing homes, and daycare centers that may need assistance, but are without communications to call for it (1971: 28; Dektar, 1971; Seismic Safety Comm, 1983: 91).
   1. Deciding when and in which areas utilities should be cut off (Seismic Safety Comm, 1983: 122).

X. Incident Organization Chart

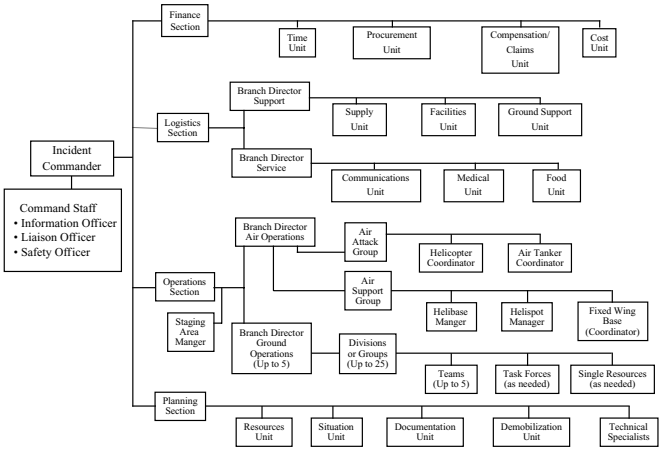


Figure 7-1. Incident organization chart.

XI. Governmental Agencies Involved in Disaster Response

A. Law Enforcement and Investigatory Agencies
   1. City
      a. Police
   2. County
      a. Sheriff
      b. Park ranger
   3. State
      a. Police, highway patrol
      b. Fish and game wardens
      c. Nuclear Regulatory Commission
      d. University police
   4. Other
      a. Fire department arson investigation bureaus
   5. Federal
      a. National Guard
      b. Secret Service
      c. Bureau of Alcohol, Tobacco and Firearms
      d. National Forest special agents
      e. Park Police
      f. Fish and Wildlife Service
      g. Coast Guard
      h. Bureau of Indian Affairs
      i. Environmental Protection Agency/State Forest/ Park ranger
      j. Department of Transportation
      k. Aviation Administration
      l. Highway Traffic Safety Administrations
      m. Railroad Administration
      n. FBI

B. Fire protection services
   1. Local
      a. City fire departments
      b. Local fire protection districts
      c. County fire departments
   2. Federal
      a. Forest Service
      b. Department of the Interior
      c. National Park Service
      d. Bureau of Indian Affairs
      e. Bureau of Land management

C. Medical organizations
   1. V.A. hospitals
   2. County hospitals
   3. Public Health Service hospitals
   4. Military hospitals
   5. Public ambulance and rescue teams
   6. Lifeguards
   7. Military land ambulances
   8. Military air-sea rescue
   9. State and county health offices
   10. State emergency medical services offices
   11. U.S. Park Service mountain rescue
   12. County Sheriff's search and rescue teams
   13. Civil Air Patrol

D. Miscellaneous
   1. Local
      a. Public works departments
      b. Welfare departments
      c. Flood control districts
      d. Cemetery district
      e. Civil Defense
   2. State
      a. Mines or geology departments
      b. Seismic safety offices
      c. Civil Defense
      d. Highway departments
   3. Federal
      a. Bureau of Mines
      b. Geological Survey
      c. Army Corps of Engineers
      d. Department of Agriculture
      e. Weather Bureau
      f. Small Business Administration
      g. Federal Emergency Management Agency

XII. Key Features of the MCI Response (Four Basic Elements)

A. Search and rescue
B. Triage and initial stabilization
C. Definitive medical care
D. Evacuation

XIII. Patient Flowchart

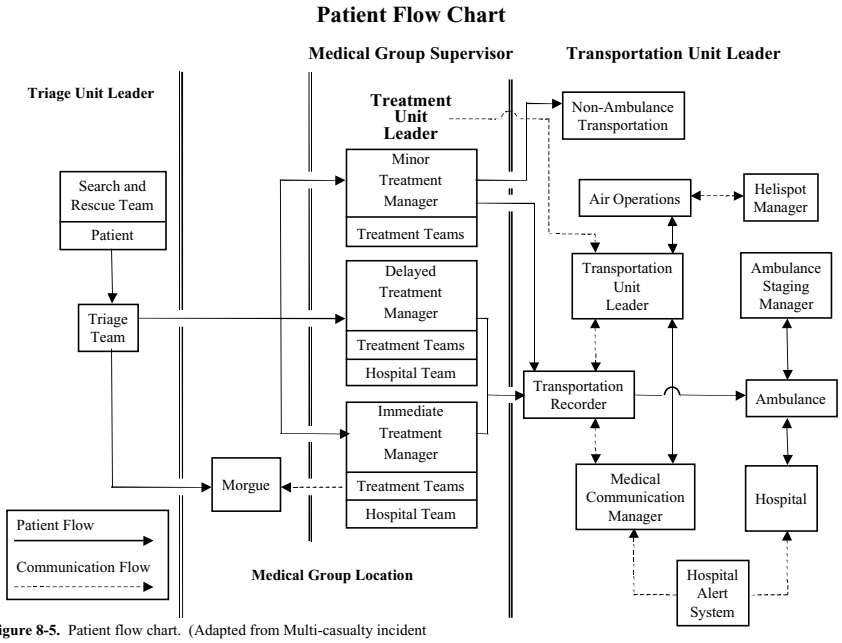


Figure 8-5. Patient flow chart. (Adapted from Multi-casualty incident operations manual, Rio Linda, 1986, California Fire Chiefs Association.)

XIV. Command Section

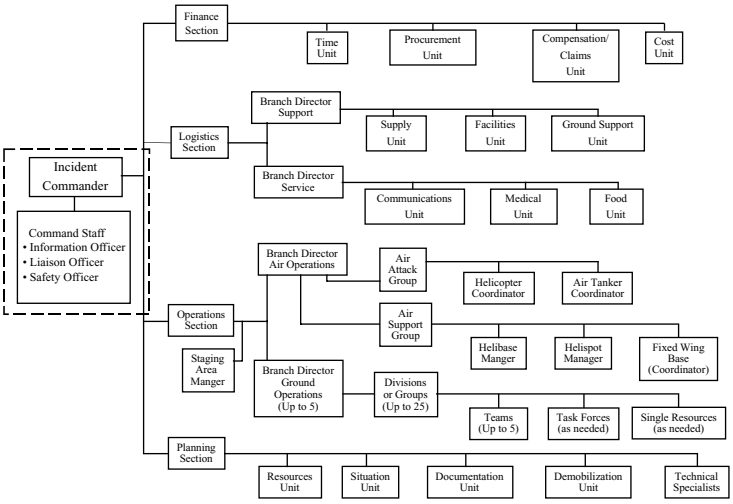


Figure 7-2. Command section.

XV. Disaster Capabilities of Military Forces

A. Security
   1. Establishment of “safe havens”.
   2. Protection of relief supplies.
   3. Maintenance of a credible armed presence to reduce threat of violence.

B. Transportation and logistics
   1. Capacity to transport personnel and supplies rapidly.
   2. Manage ongoing supply of equipment and materials.

C. Construction and repair
   1. Build or repair essential infrastructure.

D. Command, control and communications
   1. Sophisticated communications systems.
   2. Military commanders accustomed to rapid and complex contingency planning.
   3. Central planning and direction capabilities.
   4. Basic organizational and communications framework for relief organizations.

E. Deployable medical care
   1. Rapidly deployable medical teams, hospitals, ships, and medical evacuation systems.

F. Preventive medicine teams
   1. Specialized teams for basic disease prevention and control.
   2. Sophisticated infectious disease field laboratories.
   3. Field water purification units.

G. Specialized units (Civil Affairs Teams)
   1. Extensive training in foreign languages.
   2. Interface between the military and civilian populations.
   3. Experts in transportation, business, law, communications, international health, policing.

H. Technological disasters
   1. Specialized chemical warfare protection units.
   2. Network of infectious disease research laboratories.

I. Disaster preparedness
   1. MEDFLAG program.

XVI. Potential Mismatches Between Military and Humanitarian Missions

A. Medical care
   1. Military medicine designed to stabilize young adults wounded in battle; not suited for disasters and humanitarian crises where measles, diarrhea, respiratory infections, and malaria are most common causes of death, especially among young children and women.
   2. Minimal quantities of medications recommended by relief agencies for disaster-affected populations.
   3. Little training in dealing with medical problems typical for complex emergencies (for example, epidemic diarrhea or starvation, tropical diseases).
   4. Minimal quantities of vaccine taken on deployments, little experience managing large immunization campaigns among displaced persons.
   5. Limited transportation and communications capabilities for preventive medicine personnel.

B. Conflict resolution
   1. Military not well suited to mobilize indigenous resources and to assist in long-term redevelopment efforts.
   2. Temporary imposition of security by outside militaries may impede negotiation and conflict resolution.

C. Non-medical supplies
   1. Supplies readily available to military forces may be inappropriate for refugees and disaster victims.

D. Interactions with other organizations
   1. Military commanders unfamiliar with different roles of major international organizations.
   2. Civilian relief personnel have minimal experience with hierarchical military structure.
   3. Differences in strategies, objectives, and tactics between military and civilian organizations.

E. Conflict with humanitarian agenda
   1. Inherent tension in using military force to achieve humanitarian goals.
   2. Military presence can undermine appearance of neutrality of relief organizations.

F. Inadequate training
   1. Few military officers have received training in disaster relief or humanitarian assistance.
   2. Military medical providers constrained by lack of training in their languages, customs, and medical practices of other populations.
   3. Ambiguities over role of military physicians in complex emergencies under international humanitarian law.

G. Limited commitment to disaster response
   1. Principal mission of military is to fight and win war; no US units whose primary job is disaster response.
   2. Little planning and few resources devoted to disaster relief.

XVII. Incident Organization Chart

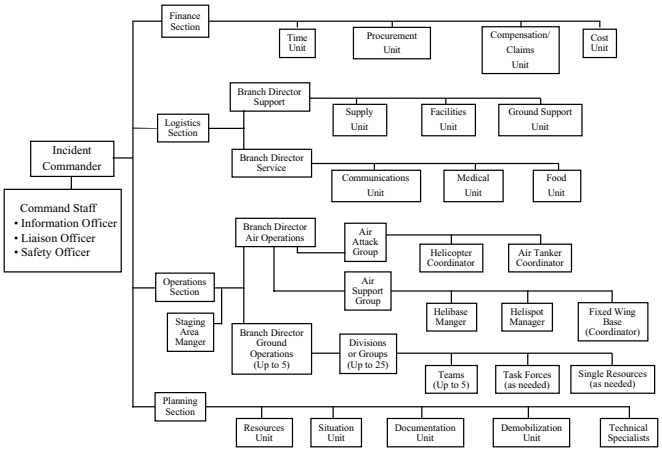


Figure 7-1. Incident organization chart.

Federal Response Plan

Joseph P. Iser, MD, DrPH
US Public Health Service
Dallas, TX

Panel Discussion:
Special Opportunities for Improving Coordination in Disaster Preparedness and Response in Border Communities

Moderator:
CAPT Joe Iser, MD, DrPH
USPHS, Regional Health Administrator, RO VI, Dallas, TX

Dr. Joseph P. Iser received his medical degree from the University of Kansas and is Board Certified in Internal Medicine, General Preventive Medicine and Public Health, and Occupational Medicine, with a broad background in emergency preparedness and response, primary care, public health, and medical education. He has specific interests in border health, international health, disaster medicine, and infectious diseases, and he has worked in hepatitis program development, implementation, evaluation, and research. He is currently the Regional Health Administrator for Region VI (Dallas), where he provides oversight for emergency preparedness, family planning, women's health, minority health, HIV, immunization, and other health programs. He has a Doctorate in Public Health from the University of Michigan and is working on a MSc in infectious diseases from the London School of Hygiene and Tropical Medicine.

Brief Narrative:

The US/Mexico border area provides special barriers to coordinating disaster preparedness, planning, and response. There have been several federally declared disasters (Laredo floods, hurricanes), and there are potentially other disasters for which a response will be required, both man-made (toxic spills, terrorism) and natural (earthquakes, fires, hurricanes, and floods). Geopolitical borders will cause potential barriers to coordination, both across state lines and the binational border. This panel will discuss these issues from the state, border health, US/Mexico Border Health Commission, and private sectors related to coordination of planning and response.

Objectives:

- Explain and discuss the Federal Response Plan.
- Discuss the relationships between border health in communities, state health officials, and the federal government in planning and responding to man-made or natural disasters.
- Describe the interactions between public and private health during a disaster response.

Outline:

- Federal Response Plan.
- Private health provider planning for disasters and interaction with county, state, and federal efforts.
- State Health Officer role in FRP and on state-wide planning and response to disasters.
- US/Mexico Border Health Commissioner discussion related to particular issues in binational cooperation, particularly on working with officials from Mexico.
- State border health involvement in working with border communities in disaster preparedness and response.

Panelists:

Alex Valdez, JD
Secretary, New Mexico Department of Health

Secretary Valdez has been in state government since 1982. He has been Cabinet Secretary for the New Mexico Department of Health since 1995 and was the Cabinet Secretary for the New Mexico Human Services Department from 1989 to 1990. He was general council during the administration of the Governor of New Mexico from 1987 through 1989. He is the recipient of the 1999 NM state bar annual service award for outstanding contribution to people with disabilities. He has been a member of the US Section of the US-Mexico Border Health Commission from December 1999 to the present.

Catherine Torres, MD
Commissioner, US-Mexico Border Health Commission

Dr. Catherine Torres is a general pediatrician who practices in Las Cruces, NM. She is very active on issues concerning children and the poor. She was appointed to the US-Mexico Border Health Commission by President Clinton in January 2000. She is also adjunct faculty for the family practice residency program at Memorial Medical Center, Las Cruces, NM.

Cecilia Rosales, MD
Arizona Office of Border Health

Dr. Rosales is the Office Chief, Arizona Department of Health Services Office of Border Health based in Tucson. She is experienced in conducting community health studies, evaluations and consultations, exposure investigations, community involvement activities, and environmental and general health education activities along the U.S./Sonora border. Prior to joining ADHS, she managed the epidemiology section for the Pima County Health Department in Tucson, AZ.

I. Briefing Overview

A. ESF #8 Role in federal response
B. National disaster medical system
C. Metropolitan Medical Response System
D. Local needs - the driving force

II. Standard Federal Regions

III. Emergency Preparedness

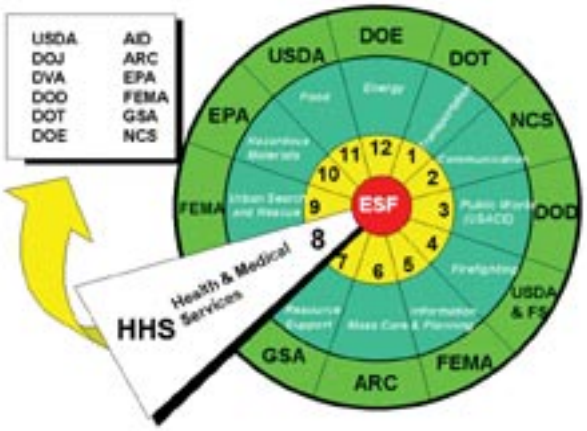
A. Natural disasters *(See Figure 1.)*
B. Transportation disasters *(See Figure 2.)*
C. Terrorism *(See Figure 3.)*
D. Technological disasters *(See Figure 4.)*

IV. Persistence of Functions Across Disasters

A. Assessment of health and medical needs
B. Health surveillance
C. Medical care personnel
D. Health/medical equipment and supplies
E. Patient evacuation
F. In-hospital care
G. Food/drug/medical device safety
H. Worker health/safety
I. Mental health services
J. Public health information
K. Vector control
L. Potable water/ wastewater & solid waste disposal
M. Victim identification/mortuary services

V. The Federal Response Plan

VI. Emergency Support Functions



VII. Emergency Support Functions #8

A. Purpose: To provide assistance to supplement state and local resources in response to public health and medical needs.

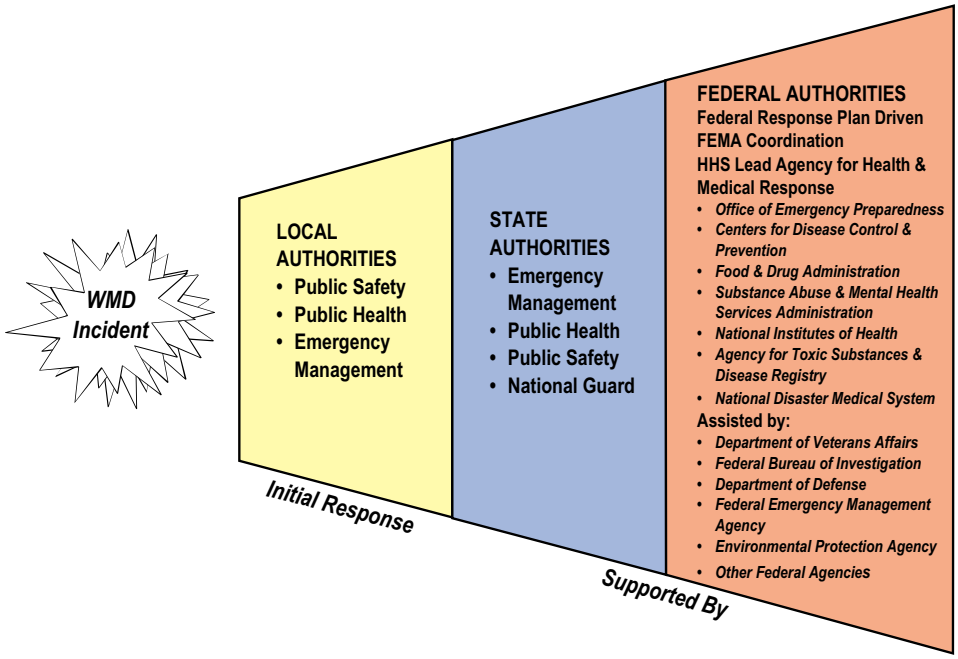
	ESF	Primary Agency
1	Transportation	DOT
2	Communications	NCS
3	Public Works	DOD/ACE
4	Fire Fighting	USDA
5	Information Planning	FEMA
6	Mass Care	ARC
7	Resources Support	GSA
8	Health & Medical Services	DHHS
9	Urban Search & Rescue	FEMA/DOD
10	Hazardous Materials	EPA
11	Food	USDA
12	Energy	DOE

VIII. Federal Response Plan Terrorism Annex

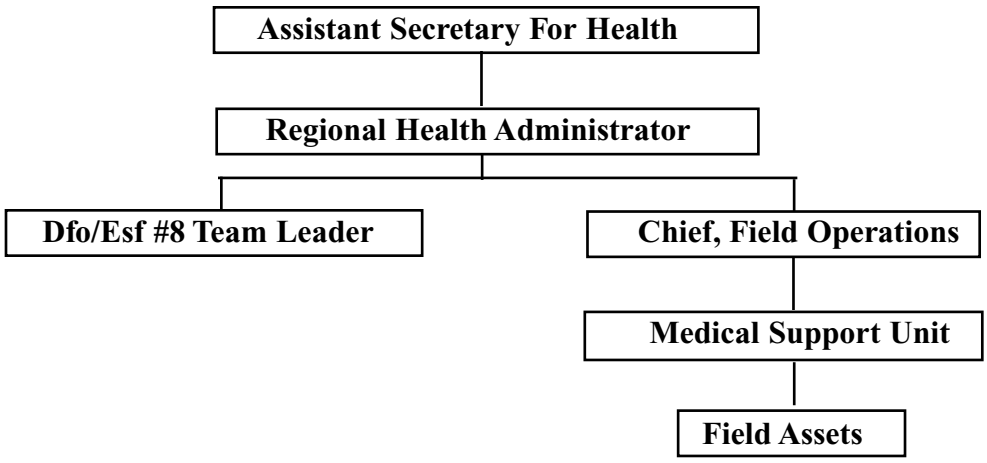
A. In consonance with PDD-39
B. Crisis management - FBI Lead
C. Consequence management - FEMA Lead
D. DHHS responsibility
   1. Health and medical response capabilities
   2. Technical Support to FBI
   3. Major role in consequence management

IX. Weapons of Mass Destruction

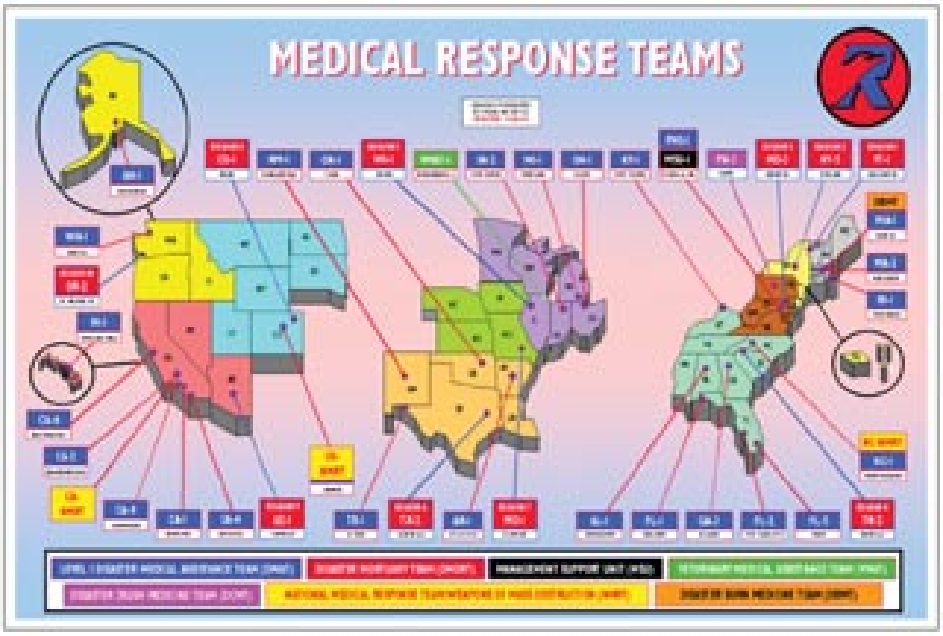
A. Consequence management
B. Response operations



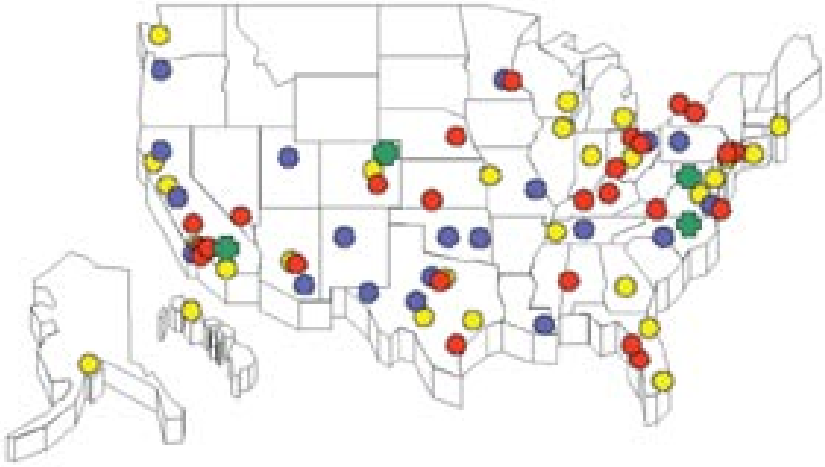
X. Command and Control



XI. Medical Response Teams



XII. Metropolitan Medical Response Systems



Original MMRS

Boston, New York, Baltimore, Philadelphia, Washington DC, Atlanta, Miami, Memphis, Jacksonville, Detroit, Chicago, Milwaukee, Indianapolis, Columbus, San Antonio, Houston, Dallas, Kansas City, Denver, Phoenix, San Jose, Honolulu, Los Angeles, San Diego, San Francisco, Anchorage, Seattle

MMRS 1999

Hampton Roads (Virginia Beach)Area, Pittsburgh, Nashville, Charlotte, Cleveland, El Paso, New Orleans, Austin, Fort Worth, Oklahoma City, Albuquerque, St. Louis, Salt Lake City, Long Beach, Tucson, Oakland, Portland (OR), Twin Cities (Minneapolis), Tulsa, Sacramento

2000 MMRS EXPANSION

Twin Cities (St. Paul), Hampton Roads (Norfolk),Cincinnati, Fresno, Omaha, Toledo, Buffalo, Wichita,Santa Ana, Mesa, Colorado Springs, Tampa, Newark, Louisville, Anaheim, Birmingham, Arlington, Las Vegas,Corpus Christi, St. Petersburg, Rochester, Jersey City,Riverside, Lexington-Fayette, Akron

NMRTs

Los Angeles, Denver, Winston-Salem, Washington, DC Metro Area

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Deployable Telemedicine

60th Annual Meeting
US Mexico Border Health Association (USMBHA)

Westin Soberano Hotel, Chihuahua, CHIH, Mexico
June 4, 2002

Deployable Telemedicine

Attendees

Elisa Aguilar, Dra.
Juárez, CHIH, Mexico

Veronica Aldana
El Paso, TX

Patricia de LC Arredondo
Monterrey, NL, Mexico

Armando Barraza, Dr.
Juárez, CHIH, Mexico

Kevin Bersell
Santa Fe, NM

Miguel Betancourt, Subdirector VE Enf.
Mexico DF, Mexico

Sandra L. Byrd
El Paso, TX

Alejandra Carlos, Ing.
Juárez, CHIH, Mexico

Diane Carper, Dr.
Bisbee, AZ

Veronica Carrion
Mexico DF, Mexico

Jessica L. Casas
El Paso, TX

Marta Castro, Lic. En Salud Pública
El Paso, TX

Bertha Cisneros, Lic
Mexicali, BC, Mexico

Martha Aurora Contreras, Ing.
Juárez, CHIH, Mexico

Oscar Rafael Contreras, Dr.
Juárez, CHIH, Mexico

Lourdes Cordero, MS
Mexico City, DF, Mexico

Elba Cornedo, Dra.
Mexicali, BC, Mexico

Melanie De Boer, Dra.
Mexico, DF, Mexico

Javier Delgado, Dr.
Sabinas Hidalgo, NL, Mexico

Luis Duarte, QBP
Juárez, CHIH, Mexico

Ronald J. Dutton, Ph.D.
Austin, TX

Douglas A. Ehrhardt, Ph.D.
Bethesda, MD

Epi Elizondo, Ph.D., PA-C
Dallas, TX

Miguel Escobedo, Dr.
Las Cruces, NM

Oscar Estrada
Las Cruces, NM

Nancy Fernandez, Dra.
Monterrey, NL, Mexico

Maria del Carmen Floriano, Dr.
Mexicali, BC, Mexico

Gene Gallegos, M.A.
Albuquerque, NM

Aster Garcia
Yuma, AZ

Fernando Gonzalez, Dr.
El Paso, TX

Moises Gonzalez, Dr.
Chihuahua, CHIH, Mexico

Victoria Lourdes Gonzalez, LIC.
Sabinas Hidalgo, NL, Mexico

Deployable Telemedicine

Attendees

Ulises Grajeda Villalobos, Dr.
Chihuahua, CHIH, Mexico

Alma Olivia Hernandez
Chihuahua, CHIH, Mexico

Magdalena Hernandez, Dra.
Chihuahua, CHIH, Mexico

Martha L. Herrera, Dr.
Juárez, CHIH, Mexico

Francisco Higa, Dr.
Juárez, CHIH, Mexico

Mario Holguin, MVZ
Juárez, CHIH, Mexico

Howard C. Lerner
Rockville, MD

Jerry Little

Craig Llewellyn, Dr.
Bethesda, MD

Arnulfo Lopez
San Luis Rio Colorado, SON, Mexico

Francisco Lopez, Mr.
Laredo, TX

Josue Lopez, Dr.
Mexicali, BC, Mexico

Maria del Socorro Lopez, DRA.
Sabinas Hidalgo, NL, Mexico

Waldo A. Lopez
Laredo, Tx

Remedios Lozada
Tijuana, BC, Mexico

Rafael M. Marrufo
El Paso, TX

Brant Marshall, Mr.
Bethesda, MD

Jessy Martínez, Ing.
Juárez, CHIH, Mexico

Robert Monsivais
Las Cruces, NM

Ana Rosa Moreno, Biol.
México, DF, Mexico

Karen Mountain, RN
Austin, TX

Rosario Muñoz
Juárez, CHIH, Mexico

Laurance N. Nickey, MD
El Paso, TX

Homero Olivarez, Dr.
Juárez, CHIH, Mexico

Leonardo Pacheco
Chihuahua, CHIH, Mexico

Yolanda Pardo, ENF.
Sabinas Hidalgo, NL, Mexico

Silvia Parra
Tucson, AZ

Carlos Pastrana, Dr.
Las Cruces, NM

Gerardo Payan, M.D.
San Luis, AZ

Walterio A. Peña
El Paso, TX

Elena Perez, Lic. Enf.
Chihuahua, CHIH, Mexico

Maria Guadalupe Pérez
El Paso, TX

Deployable Telemedicine

Attendees

Fred Pintz, Dr.
El Paso, TX

Quent Pirtele

Candy Porchas
Yuma, AZ

Prisci Quijada, Ms.
San Diego, CA

Ismael Quintana
Chihuahua, CHIH, Mexico

Agueda Ramos, C.
Juárez, CHIH, Mexico

Daniel Reyna, Mr.
Las Cruces, NM

Alfonso Rodriquez-Lainz
San Diego, CA

Nancy Rushforth, MS.
Las Cruces, NM

Araceli Salazar, Q.B.P.
Juárez, CHIH, Mexico

Sandra Julia Salazar
San Luis Rio Colorado, SON, Mexico

María Isabel Sandate, Dra.
Tucson, AZ

Lourdes Sandoval
El Paso, TX

Ma. de Lourdes Sandoval, Q.B
Mexicali, BC, Mexico

Maria del Carmen Sandoval
El Paso, TX

Yolanda Serrato, DRA.
Sabinas Hidalgo, NL, Mexico

Brian R. Smith, M.D., M.P.H.
Harlingen, TX

Conchita Soria
San Luis Rio Colorado, SON, Mexico

Roberto Alejandro Suarez, Dr.
Juárez, CHIH, Mexico

Arnold Trujillo
Yuma, AZ

Eduardo Uribe, Lic.
Cd. Juarez, CHIH., Mexico

Rudy Valenzuela, R.N.
Yuma, AZ

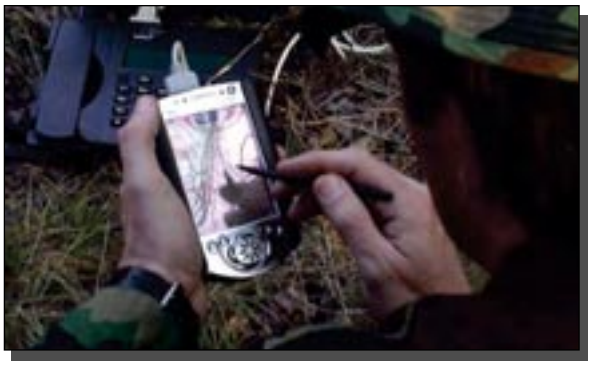
Martha Vazquez, Dr.
San Diego, CA

Tia Yancey, Ms.
Las Cruces, NM

Deployable Telemedicine

Randall Spears

Center for Disaster and Humanitarian Assistance Medicine
Bethesda, MD



I. What is Telemedicine?

A. "Tele" is a Greek word, meaning *Distance* or *Far Away.*
B. Telemedicine allows health care providers to treat patients from a distance.
C. It enables advanced medical consultants from austere, remote areas.
D. It also provides portable communications infrastructure for medical and disaster management.

II. The Spectrum of Telemedicine

A. Voice Communications *(See Figure 1.)*
B. E-Mail *(See Figure 2.)*
C. Fax Transmission *(See Figure 3.)*
D. Data Collection *(See Figure 4.)*
E. Still Image Forwarding *(See Figure 5.)*
F. Video Conferencing *(See Figures 6&7.)*
    1. Real Time
    2. From Anywhere
    3. To Anywhere

III. What Can Telemedicine Do?

A. Perform remote ultrasound examinations. *(See Figure 8.)*
    1. Transmit images of a patients abdomen after being injured.
    2. Patient has blood in the abdomen.
B. Allows Physicians to examine eyes, ears, nose and throat remotely from the medic on the ground and recommend treatments.
C. Allows Dentists to provide on the spot exams and treatments from the office.
D. Allows Dermatologists to view and diagnose skin lesions from anywhere in the world. *(See Figures 9 & 10.)*
E. Allows Radiologists worldwide access for the reading of x-rays.
F. Allows Epidemiologists and Public Health officials to send images for definite identification of disease organisms and assist in planning for Public Health interventions. *(See Figures 11 & 12.)*
G Allows remote monitoring of a patients vital signs.
H. Assists Physical Therapists with the rehabilitation of land mine victims.
I. Provides open standard communications platform for disaster and mass casualty incidents. *(See Figure 13.)*

IV. How We Do Deployable Telemedicine

A. Portable International Maritime Satellite-INMARSAT Satellite Communications. *(See Figures 14 & 15.)*
B. Deploy with a suite of medical imaging and dianostic devices. *(See Figure 16.)*
C. Characteristics *(See Figures 17 & 18.)*
    1. Portable
    2. Lightweight
    3. Rugged
    4. Self Sustaining
    5. Commercial off-the-shelf (COTS) technology.
D. Applicability
    1. Anytime
    2. Anywhere
    3. Any weather

V. Other Things We Do

A. Training in Telemedicine *(See Figure 19.)*
B. Operational Support *(See Figure 20.)*

VI. For additional information:

A. 301-295-1038

B. http://www.usuhs.mil/mim/CDHAM_Page.htm

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Figure 5.

Figure 6.

Figure 7.

Figure 8.

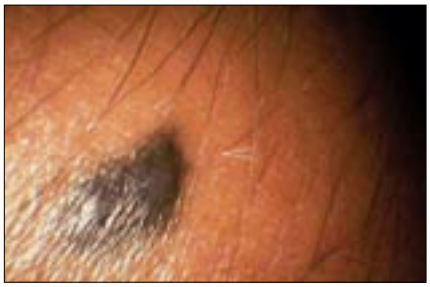


Figure 9.

Figure 10.

Figure 11.

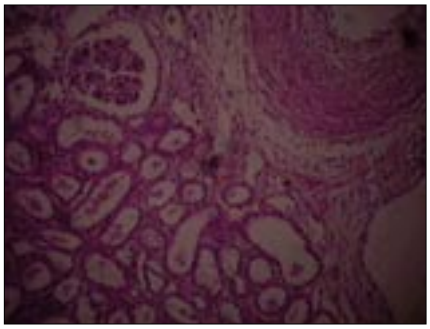


Figure 12.

Figure 13.

Figure 14.

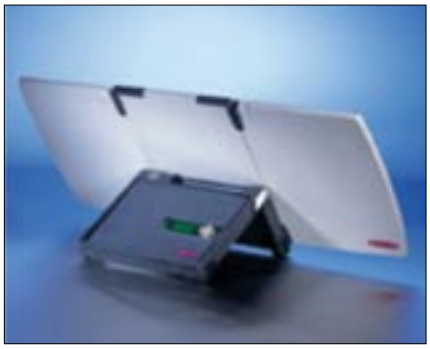


Figure 15.

Figure 16.

Figure 17.

Figure 18.

Figure 19.

Figure 20.